

Lower Joseph Creek Restoration Project

Botany Biological Evaluation



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for

Wallowa Mountain Ranger District

Wallowa-Whitman National Forest

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Introduction

This report will focus on:

- Threatened, Endangered and Sensitive (TES) plant species and habitat for suspected species present in the project or effects area
- Plants with cultural significance to Native American tribal members, in the project area.
- Proposed actions that may reduce viability, habitat, populations or individuals of TES plants within the project area
- Existing condition: identifying past and present (ongoing) actions or conditions that may reduce viability, habitat, populations or individuals with the project area.
- Cumulative Effects: identifying reasonably foreseeable actions, in addition to past, present and proposed actions that may reduce viability, habitat, populations or individuals with the project area

TES plants discussed in this report include all plant species designated by the U.S. Fish and Wildlife Service (USFWS) as federally listed, proposed, or candidate, and plant species designated as sensitive on the most recent Region 6 Regional Forester's Special Status Species List (USDA Forest Service, December 9, 2011). Rare plants in Oregon tend to fall into two primary groups of rarity-types, corresponding roughly to Oregon Biodiversity Information Center (ORBIC) lists 1 and 2. These are: plants with narrow geographic ranges, restricted habitats, and large or small populations, which are List 1 taxa, classic endemics; and taxa with wide ranges, restricted habitats, and large or small populations, primarily List 2 species (Kaye 1997). Many rare and endangered species that began as natural rarities have, through one form or another of human-induced detrimental changes in their populations and/or habitat, become anthropogenic rarities needing immediate protection and recovery (Feidler 2000). The sensitive plant list includes vascular plants, non-vascular plants (mosses and liverworts), lichens, and fungi (mushrooms and truffles) species. These species are collectively referred to as sensitive plants throughout this report.

TES plant species are indirectly referenced in all three significant issues: road management, vegetation treatment, and treatment in MA15 and IRAs in the sense that all of the significant issues have resulting actions that have the potential to create disturbance that may reduce viability, habitat, populations or individuals of TES plants, or increase viability and habitat in other instances, depending on the ecology of the species. TES plants are also indirectly referenced in other considerations of wildlife habitat, fire and fuels management, livestock grazing, watershed management, and aquatic habitat. Biodiversity will be discussed in the context of habitat and as part of restoration activities.

This analysis is limited to activities within the proposed action that may reduce viability, habitat, populations or individuals of TES plants. TES plants are not directly mentioned in the purpose and need for the Lower Joseph Restoration project. There is an indirect connection in the stated purpose of the project, “to protect natural resources at risk to uncharacteristic wildfires”.

Desired Condition

The objectives of the Biological Evaluation process (FSM 2672.41) are:

- To ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native plant, or contribute to a trend towards Federal listing of any species.
- To comply with the portion of the Endangered Species Act that requires that actions of Federal agencies not jeopardize or adversely modify critical habitat of federally listed species.
- To provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decision making process.

The goals stated in the WWNF LRMP regarding TES species are:

- To protect and manage habitat for the perpetuation and recovery of plants and animals which are listed as threatened, endangered, or sensitive.
- To assure that management activities do not jeopardize the continued existence of sensitive species or result in adverse modification of their essential habitat.

Relevant HCNRA CMP goals are:

- Maintain or restore habitat to provide viable populations of rare and endemic plant species in the HCNRA.

Methodology

Prefield Review: Existing Populations and Surveys for Sensitive Plant Species

A pre-field review was conducted to determine the probability that sensitive plant populations, and potential sensitive plant habitat, are located within, or adjacent to, the project planning area. This information was used to determine the need for, and intensity of, botanical surveys.

The following sources of information were used to determine which species, and their respective habitats, may occur within, or adjacent to, the project planning area:

- USFS Region 6 Sensitive Species List (USDA Forest Service; 2011)
- Interagency Special Status / Sensitive Species Program website.
- GIS mapping layers (vegetation, streams and wetlands, aerial imagery)
- Project GIS layers showing potential activity units
- “Field Guide to Sensitive Plants of the Wallowa-Whitman National Forest” (USDA Forest Service, unpublished document, 2014)
- United States Department of Interior Fish and Wildlife Service (USDI-FWS) website.
- USFS Natural Resource Manager TES Plant tabular and spatial data USFS 2014.
- Lower Joseph Range Analysis, WMO, 2005
- Lower Joseph Watershed Analysis, WMO 2010
- Recovery Plan for *Silene spaldingii* (Spalding’s Catchfly), USFWS 2007
- Project Files for The Blue Mountain LRMP, Brooks 2007
- USDA NRCS Plants Database (website)
- 2007-2013 Consortium of Pacific Northwest Herbaria (website)
- Oregon Biodiversity Information Center

Botanical surveys for this project were conducted according to standard Forest Service procedures, using the intuitive controlled method. This means that large areas were surveyed, focusing on searching habitats for TES species determined from the pre-field review (USDA

Forest Service 2008). At the time of the surveys, individual activity units, and proposed riparian restoration, and road work were only broadly delineated, so surveys were not done in all proposed vegetation management units, nor were all specific road work areas surveyed. Selected high probability areas with potential for ground disturbance would be surveyed before project implementation. If any sensitive plants are found, mitigations for protection would be developed.

Habitat Groups

Sensitive plants tend to grow in specialized habitat types within broader plant communities. For example, some species are found in moist swales and depressions within general sagebrush habitat. Others occur in the transition zones between habitat types. Since there are so many potential sensitive plant species in the LJCRP area, it is more efficient to talk about the broad habitat types, rather than each individual species. For this analysis, plant communities and special habitats have been grouped into broad habitat association groups.

Potential vegetation is defined as the community of plants that would become established if all successional sequences were completed without interference by humans, under existing environmental conditions including edaphic, topographic, and climatic factors. Potential vegetation is used to characterize biophysical settings, and their associated potential natural communities. Potential vegetation groups are named for a predominant or controlling temperature or moisture relationship (Powell et al, 2007). Only the more prevalent potential vegetation groups are included in the following discussion. They will be used to characterize habitat groups for the sensitive plant species that may be found on the Wallowa-Whitman National Forest.

Key Effects Indicators

To help define current condition for TES plants, viability for TES species were considered using the following methods.

Viability

“For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. In order to insure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area.” (36 CFR 219.19)

Species included on the R6 Regional Forester’s TES list have viability concerns. In addition to the R6 determination of viability at risk, Oregon Biodiversity Information Center (ORBIC), a state funded entity that provides information on Rare Plants and Animals in Oregon, provides more detail about the type of rarity/viability risk for each species. ORBIC uses a 1-5 scaled ranking, based primarily on the number of known occurrences, but also including threats, sensitivity, area occupied, and other biological factors. Global (G) and State (S) are included. The ranks are summarized below:

1 = Critically imperiled because of extreme rarity or because it is somehow especially vulnerable to extinction or extirpation, typically with 5 or fewer occurrences.

2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (extirpation), typically with 6-20 occurrences.

3 = Rare, uncommon or threatened, but not immediately imperiled, typically with 21-100 occurrences.

4 = Not rare and apparently secure, but with cause for long-term concern, usually with more than 100 occurrences.

5 = Demonstrably widespread, abundant, and secure.

H = Historical Occurrence, formerly part of the native biota with the implied expectation that it may be rediscovered (ORBIC 2012).

Diversity

Biodiversity is an important component of ecosystem function. While more than one species may provide the same functional roles in a given ecosystem, different species traits are important under differing climatic situations (Gascon et al 2015). The precautionary principle is that extinction (or decreased local occurrence) of native species within a system can be expected to decrease ecosystem functioning and services in at least some contexts (Isbell et al 2011). "Keeping all the parts" is a central tenet of ecosystem management, and is a core principle that guides the Forest Service's management of the National Forest and Grassland ecosystems (Burns and Pivorunus 2012)

"Forest planning shall provide for diversity of plant and animal communities and tree species consistent with the overall multiple-use objectives of the planning area. Such diversity shall be considered throughout the planning process. Inventories shall include quantitative data making possible the evaluation of diversity in terms of its prior and present condition. For each planning alternative, the interdisciplinary team shall consider how diversity will be affected by various mixes of resource outputs and uses, including proposed management practices." (36 CFR 219.26)

Diversity is given in this document as total number of vascular plant species, as a ratio of native to non-native plants, and using the Shannon diversity index as an indicator of variability. The Shannon diversity index indicates where there is more variation in a community's composition, the less predictable each sample of it would be. Values range from 0 for a community with one species to values up to 7 for communities with many species, The higher the number, the less predictable the sample (Barbour 1987).

Incomplete and Unavailable Information

Landscape scale analysis does not allow for detailed site-specific plant surveys. While TES surveys were done in high probability areas for TES plant species within the project area, it is possible that activities could be implemented in areas that have not been surveyed. Therefore, it is possible that there may potentially be impacts to undiscovered populations of sensitive plants.

Some sensitive plant species don't produce above-ground plants every year. Vascular plants include some grape-ferns (*Botrychium spp.*), and many annual species which are dependent upon sufficient early spring rains. Some of the annual sensitive species include least phacelia (*Phacelia minutissima*), annual muhly grass (*Muhlenbergia minutissima*), and lowland tooth-cup

(*Rotala ramosior*). It is possible that surveys may not detect these plants in years when conditions do not favor germination. Some species, such as the least phacelia, annual muhly grass, and grapeferns, are so tiny and difficult to find in dense vegetation that even expert botanists may overlook them during surveys. Many of the non-vascular plants are very difficult to identify; it is possible that botanists may also overlook some of these species. For these reasons, it is not possible to state with 100 percent certainty that all sensitive plant species would be detected during sensitive plant surveys.

There are no empirical studies on the impacts of logging, burning, or grazing to most sensitive plant species that occur on the Wallowa-Whitman National Forest. The strategy for management of known populations has generally been avoidance of activities that may impact known populations and managing for habitat to protect undetected populations and individuals. Therefore, all discussion of potential impacts to sensitive plant populations and habitat is based upon general experience and inferred responses based upon observations and studies of more common species.

Regulatory Framework

This report provides documentation of the biological evaluation process used for plants for this project. It also includes documentation and analysis related to the Federal Endangered Species Act in regards to plants.

The biological evaluation (BE) process as outlined in the Forest Service manual (Section 2672.4) states:

“The Forest Service shall review all Forest Service planned, funded, executed, or permitted programs and activities for possible effects on endangered, threatened, proposed, or sensitive species. The biological evaluation is the means of conducting the review and of documenting the findings. Document the findings of the biological evaluation in the decision notice. Where decision notices are not prepared, document the findings in Forest Service files. The biological evaluation may be used or modified to satisfy consultation requirements for a biological assessment of construction projects requiring an environmental impact statement.”

Land and Resource Management Plan

The Wallowa-Whitman National Forest Land and Resource Management Plan (LRMP) provides standards and guidelines for maintaining diversity, sensitive species.

Diversity

WWNF LRMP 4-30

Standards and Guidelines

- Project Analysis: Develop, during project planning, site-specific management prescriptions with goals for diversity and ecosystem function.
- Vegetation Manipulation: Provide and maintain an ecologically sound distribution and abundance of plant and animal communities and species at the forest stand, basin, and Forest level. This distribution should contribute to the goal of maintaining all native and desirable introduced species and communities

- Allow for all natural species to function following vegetation manipulation. None should be eliminated from the site.
- MA 3, 3A: Timber/Wildlife emphasis: Favor prescribed fire slash treatment methods when feasible prescribed fire from planned or unplanned ignitions will be used to achieve winter range management objectives, and maintain diversity within plant communities

WWNF LRMP 4-30 to 4-31

Threatened, Endangered and Sensitive Species

Standards and Guidelines

- Review all actions and programs, authorized, funded, or carried out by the Forest Service, to determine their potential effects on threatened, endangered, and sensitive species. Conduct these reviews, including biological evaluations, per direction in FSM 2670 and appropriate R-6 manual supplements.
- Prepare a biological evaluation during the environmental analysis of each project to determine possible effects of the proposed activity on threatened, endangered, and sensitive species.
- Restrict or prohibit other activities (e.g. , off road vehicles impacting plants or habitats) and monitor activities where necessary to protect threatened, endangered, or sensitive species.
- Cooperate with the US Fish and Wildlife Service, the States of Oregon, Washington, and Idaho in the development and implementation of recovery plans for threatened and endangered species. When such plans conflict with other management direction, the recovery plans will take precedence.
- Monitoring: Monitor known populations of sensitive species and their habitats in accordance with the Forest Monitoring Plan.

HCNRA CMP

Rare and Endemic Plant Species

Standards and Guidelines

Bio-S1: During project-level planning, to the extent feasible, survey and document the location of populations of rare and endemic plant species, rare combinations of outstanding and diverse ecosystems and parts associated therewith; and rare combinations of aquatic, terrestrial, and atmospheric habitats. Consider the effects of proposed projects on populations of rare and endemic plant species, rare combinations of outstanding and diverse ecosystems and parts associated therewith; and rare combinations of aquatic, terrestrial, and atmospheric habitats. Prescribe mitigation and protection for populations of rare and endemic plant species, rare combinations of outstanding and diverse ecosystems and parts associated therewith; and rare combinations of aquatic, terrestrial, and atmospheric habitats.

Refer to Appendix G – Detailed Vegetative Data for the criteria and a listing of rare and endemic plant species, rare combinations of outstanding and diverse ecosystems and parts associated therewith; and rare combinations of aquatic, terrestrial, and atmospheric habitats. (New)

TES-O1: Manage habitat and populations of federally listed threatened, endangered or proposed plant species to ensure their continued existence and recovery in the HCNRA. Ensure that ongoing and new management actions do not jeopardize federally listed threatened, endangered

or proposed plant species. Implement restoration and recovery activities that would facilitate removal of species from the federal threatened and endangered species list. (Forest Plan, FSM 2670)

TES-O2: Manage habitat and populations of all FS sensitive plant species to ensure their continued existence and viability in the HCNRA. Ensure that all actions do not contribute to the species becoming federally listed threatened and endangered under the *ESA*. (Forest Plan, FSM 2670)

TES-O3: Implement recovery plans for federally listed threatened, endangered or proposed plant species cooperatively with the USFWS. Contribute to revisions of recovery plans, and carry out recommended actions in recovery plans. (Forest Plan, FSM 2670)

TES-S1: When evaluating ongoing and new actions, survey probable habitat for rare plants. Mitigate potential conflicts or modify the project to ensure the protection of rare plants and their associated habitat. (Forest Plan, FSM 2670)

TES-O4: Conduct habitat improvement projects for federally listed species. These may include fencing, burning, closing roads, treatment of noxious weeds, plant propagation, or other actions. (New)

TES-S2: Monitor population trends and habitat conditions for federally listed threatened, endangered or proposed plant species. (Forest Plan)

TES-S3: Manage habitat and populations of FS sensitive species consistent with conservation agreements or conservation strategies. (New)

In the absence of conservation agreements or strategies, manage sensitive plant species to ensure their continued viability in the planning area. (Forest Plan, FSM 2670)

TES-G1: To achieve recovery plan goals, consider reintroduction of federally listed species, in suitable, currently unoccupied habitat. (New)

TES-G2: Consider modifications to activities such as seasonal or permanent closures for roads, trails, exclusion of domestic livestock grazing, and modification of grazing plans where conflicts with the protection of rare plant species are identified. (Forest Plan)

Fire-S6: Construct firelines to avoid any known federally listed threatened and endangered or proposed plant species or potential habitat, unless coordinated with a Resource Advisor and suitable alternative locations and actions are not possible. (New)

Management Areas

Management of TES plants follows Wallowa-Whitman LRMP and HCNRA CMP standards and guides, respectively. The following management areas are found within LJCRP.:

- MA1 Timber, and MA3 Big Game Habitat: For TES plants and special habitats, follow LRMP direction.
- MA 7 Wild and Scenic River (Joseph Creek): Management of lands bordering or adjacent to the river (and its associated corridor) will not diminish the special values which caused the river to be included in the National Wild and Scenic Rivers System.
- MA 9 HCNRA Dispersed Recreation: In these areas all activities will be managed to provide ample opportunities for dispersed recreation and to enhance native vegetation, it is envisioned that these areas will eventually be almost entirely occupied by native plant species.
- MA 10 HCNRA Forage, and MA 11 HCNRA Dispersed Recreation and Timber: For TES plants and special habitats, follow HCNRA CMP direction.

- MA 12 Research Natural Areas (Horse Pasture Ridge, Haystack Rock): The objectives for establishing RNA's are to preserve examples of all significant natural ecosystems for comparison with those influenced by humans, to provide educational and research areas for ecological and environmental studies, and to preserve gene pools for typical and rare and endangered plants and animals.
- MA 15 Old Growth Forest: These areas are intended to maintain habitat diversity, preserve aesthetic values, and to provide old-growth habitat for wildlife. For TES plants and special habitats, follow LRMP direction.
- Roadless Rule and Inventoried Roadless areas (36 CFR Part 294)
Roadless area characteristics (1) High quality or undisturbed soil, water, and air; (2) Sources of public drinking water; (3) Diversity of plant and animal communities; (4) Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land; (5) Primitive, semi-primitive non-motorized and semi-primitive motorized classes of dispersed recreation; (6) Reference landscapes; (7) Natural appearing landscapes with high scenic quality; (8) Traditional cultural properties and sacred sites; and (9) Other locally identified unique characteristics.
§ 294.12 Prohibition on road construction and road reconstruction in inventoried roadless areas.
§ 294.13 Prohibition on timber cutting, sale, or removal in inventoried roadless areas.
Exceptions:
 1. The cutting, sale, or removal of generally small diameter timber is needed for one of the following purposes and will maintain or improve one or more of the roadless area characteristics as defined in § 294.11.(i) To improve threatened, endangered, proposed, or sensitive species habitat; or (ii) To maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects, within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period;
 2. The cutting, sale, or removal of timber is incidental to the implementation of a management activity not otherwise prohibited by this subpart;
 3. The cutting, sale, or removal of timber is needed and appropriate for personal or administrative use, as provided for in 36 CFR part 223
 4. Roadless characteristics have been substantially altered in a portion of an inventoried roadless area due to the construction of a classified road and subsequent timber harvest. Both the road construction and subsequent timber harvest must have occurred after the area was designated an inventoried roadless area and prior to January 12, 2001. Timber may be cut, sold, or removed only in the substantially altered portion of the IRA.

Federal Law

Endangered Species Act
Critical Habitat Unit
National Forest Management Act

Executive Orders

Invasive Species, EO 13112 of February 3, 1999
Protection of Wetlands EO 11990 of May 24, 1977
Environmental Justice, EO 12898 of February 11, 1994

State and Local Law

ORS 2013 564.105 Responsibility to protect and conserve native plants

Other Guidance or Recommendations

Viability USDA regulation 9500-004 2008
Forest Service Manual 2600 and 2670 TES Plants
Species Diversity 1982 Planning Rule Section 291.27(g)
The Interior Columbia Basin Strategy
USFWS 2007 Recovery Plan for *Silene spaldingii* (Spalding's Catchfly)

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

All activities proposed under any action alternative comply with Forest Plan and other relevant laws, regulations, policies, and plans. The biological evaluation process and the interdisciplinary team process ensure that Federally listed, proposed, candidate, and Forest Service Sensitive plant viability are considered for all actions undertaken by the agency. The BE process was conducted by a professional botanist. For details of the specific compliance with laws, regulations, policies, and plans see the relevant section of the botany specialist report.

Affected Environment

Project Area

The Lower Joseph Creek project area lies adjacent and east of Oregon State Highway 3 on the northern boundary of the Wallowa-Whitman National Forest (WAWNF), approximately 20 miles north of Enterprise in Wallowa County. The project encompasses approximately 98,000 acres and is bounded by Cold Springs Ridge to the northeast, Forest Road 46 to the east, and Elk Mountain to the south. It contains the upper reaches of the Joseph Creek drainage, including the watersheds of Lower and Upper Swamp Creek, Peavine Creek, Rush Creek, Davis Creek, Sumac Creek, Lower and Upper Cottonwood Creeks, Broady Creek, Horse Creek, Cougar Creek, and Green Gulch.

The area is characterized by deep canyons with very steep, grass-covered side slopes interspersed with numerous exposed rock (basalt) layers. Vegetation is composed of cool moist and warm dry grasslands, warm dry shrublands, dry mixed conifer forest and moist mixed conifer forest. Elevations range from about 3600 to 5000 feet.

Existing Condition

Diversity

The following table shows selected potential vegetation groups as habitats. The potential vegetation groups shown were selected because they contain habitat for TES plants. Within the selected habitats shown, the number of plant communities documented by the ecology program in LJCRP are displayed. With the exception of rigid sage/ Sandberg's bluegrass, shrublands are not shown in the table. Dry upland shrub lands in LJCRP have a total of two plant associations represented. Moist upland shrub lands have five plant associations represented. There are no suspected or known TES plants in shrub lands in LJCRP.

Maintaining biodiversity is important for ecosystem resilience because it provides more species to occupy similar niches. Increasing biodiversity can indicate an increase in ruderal (weedy) species that do not compete well in later seral stages. This type of increase in biodiversity can indicate frequent disturbance, which along with increased amounts of bare soil, can be an early warning sign of habitat degradation. Cattle grazing can increase unpalatable flowering plants such as lupine, while reducing cover in perennial bunchgrasses, such as Idaho fescue and blue bunch wheatgrass. Biodiversity without any parameters is not useful in knowing whether or not a community is healthy, in some cases organisms other than vascular plants may increase. For example, currently there is very little data on biodiversity for lichens and bryophytes, two major components of biological soil crusts. The presence of biological soil crusts is thought to indicate healthy bunchgrass ecosystems, which would have very little cover in annual grasses annual or perennial forbs, primarily being composed of a few perennial grasses with biological soils crusts filling the spaces between bunchgrasses.

Table. Diversity by plant communities, species richness, percent native species and Shannon diversity index for LJCRP.

Selected Habitats	Number of Plant Associations Documented in Selected Habitats	Total Species Richness	Native Species Richness	Percent Relative Cover in Native Species	Shannon Diversity Index
Rigid sage/ Sandberg's bluegrass	1	60	54	90	3.6
Cold Moist Idaho fescue	7	140	123	89	4.2
Dry Upland Herbland	8	126	110	87	4.2
Moist Upland Forest	7	80	79	99	3.8
Dry Upland Forest	7	139	124	89	4.1
All Habitats	37	318	294	92	2.4

Viability and Habitat of Known Threatened, Endangered, Proposed, R6 Sensitive and Strategic Plants

Threatened and Endangered Plants

A review of the list prepared for Wallowa County shows that there are two federally listed threatened plant species with potential habitat in the LJCRP. Sensitive species are discussed by habitats following the information on McFarlane's four-o'clock (*Mirabilis macfarlanei*) and

Spalding's catchfly (*Silene spaldingii*). Botanical surveys were conducted during the 2014 field season, covering over 20,000 acres. McFarlane's four o'clock is not suspected from the LJCRP due to previous work in the project area. While suitable habitat for Spalding's catchfly exists in the project area, no occupied sites were found within LJCRP and as a result LJCRP is not likely to adversely affect Spalding's catchfly. Habitat analysis for Spalding's catchfly is included with the R6 Sensitive species found in grasslands since there is potential habitat for this species.

MacFarlane's four-o'clock – MacFarlane's four-o'clock is listed as Threatened under the Federal Endangered Species Act (ESA) (USFWS 1996).

MacFarlane's four-o'clock is a perennial plant with a deep-seated, thick tap-root and spectacular bright magenta flowers. On the WWNF, MacFarlane's four-o'clock grows in canyon grassland habitats between 1,000 and 3,200 feet in elevation in the Imnaha and Snake River drainages of Oregon and Idaho. The total geographic range of the species is approximately 29 by 18 miles. MacFarlane's four-o'clock habitat is characterized by regionally warm and dry conditions, with less than 12 inches of precipitation, primarily rain during winter and spring. Populations have been found in many different non-forest plant associations, soil types, and on all aspects and slope angles. Its habitat is generally described as canyon bluebunch wheatgrass grasslands, though some patches are found adjacent to low elevation sumac, hackberry and mountain mahogany. Soil surveys have not been conducted in or near occupied habitat, but MacFarlane's four-o'clock occurs on several soil types.

There are no known populations of this species in the LJCRP, although the Joseph Canyon system contains plant associations and other environmental elements, including elevation, that are consistent with environmental attributes of known MacFarlane's four-o'clock sites elsewhere across its range. A few surveys have been conducted in Joseph Canyon for this species. In 2001 the WWNF completed a cooperative project with the Oregon Biodiversity Information Center (ORBIC) to model potential habitat (Murray 2001) for MacFarlane's four-o'clock for use in the development the Hells Canyon National Recreation Area Comprehensive Management Plan. This model was subsequently used in 2003 to help identify potential habitat within the planning area of the Joseph Creek Rangeland Analysis project. Professional judgment, aerial imagery, and model results were used to identify and prioritize areas for survey work and analysis. Approximately 400 acres of potential habitat were selected for survey work in Joseph Canyon during the 2003 and 2004 field seasons. These areas were surveyed by Forest service personnel and contracted botanists. No MacFarlane's Four-O-Clock was located during these surveys. Additional TES plant surveys were conducted in 2014 in preparation for LJCRP. Upon review of field observations gathered during surveys it was concluded that it was very unlikely that any MacFarlane's four-o'clock would be found in the area of Joseph Canyon that was administered by the Forest Service. It was concluded that better potential habitat exists further down canyon closer to the Snake River where Joseph Canyon is warmer and wider (Hustafa, 2014)

Spalding's catchfly (*Silene spaldingii*) – Spalding's catchfly is listed as Threatened under the ESA.

Spalding's catchfly (*Silene spaldingii*) is a long-lived perennial in the carnation or pink family. The plant's long taproot makes transplanting the species difficult at best, and perhaps impossible.

The plant blooms from mid-July through August, but it can bloom into September. The plant may remain dormant for 3 (and up to 6) consecutive years without emerging above ground. The species, listed as threatened in 2001, is native to portions of Idaho, Montana, Oregon, Washington, and British Columbia, Canada, and is found predominantly in bunchgrass grasslands and sagebrush-steppe habitats, and occasionally in open pine habitats. Occupied habitat includes five physiographic (physical geographic) regions: the Palouse Grasslands in west-central Idaho and southeastern Washington; the Channeled Scablands in eastern Washington; the Blue Mountain Basins in northeastern Oregon; the Canyon Grasslands of the Snake River and its tributaries in Idaho, Oregon, and Washington; and the intermountain valleys of northwestern Montana. A final recovery plan for this plant was released October 15, 2007. The goal of the recovery plan for Spalding's catchfly is to recover the plant by protecting and maintaining reproducing, self-sustaining populations so that protection under the Endangered Species Act is no longer necessary. States in which *Silene spaldingii* is known to occur are Idaho, Montana, Oregon and Washington (British Columbia in Canada).

Spalding's catchfly is found in several widely scattered populations in Wallowa County. The largest occurrences are found on TNC land on the Zumwalt prairie and Clear lake ridge. On the WWNF, this species is typically found in grasslands dominated by Idaho fescue (*Festuca idahoensis*). On the Wallowa Valley Ranger district Spalding's catchfly is found in habitat typically classified as Idaho fescue – prairie junegrass ridgetop plant associations (Murray 2001). Several populations of this species are found in this habitat in the Crow creek and Romaine gulch vicinities adjacent to the southeast portion of the LJCRP. In the Hells Canyon National Recreation Area, Spalding's catchfly is found in habitat typically classified as Idaho fescue – prairie junegrass low elevation plant associations (Murray 2001). It is likely that it would also be found on other variations of fescue habitats found in the canyon. Spalding's catchfly is recorded in this habitat in the lower Imnaha canyon and in the Joseph canyon north of the National Forest boundary.

Surveys specifically targeting this species on National Forest land have occurred on a limited basis related to project specific planning efforts. Two inventory projects specifically targeting this species have been funded and conducted in the LJCRP by the USFWS and the Forest Service. Two other similar inventory projects specifically targeting this species have been conducted in the Upper Joseph Canyon Watershed. In 2001 the WWNF completed a cooperative project with the Oregon Biodiversity Information Center (ORBIC) to model potential habitat for Spalding's catchfly for use in the development the Hells Canyon National Recreation Area Comprehensive Management Plan (Murray 2001). This model was subsequently used in 2003 to help identify potential habitat within the planning area of the Joseph Creek Rangeland Analysis project. Professional judgment, aerial imagery, and model results were used to identify and prioritize areas for potential survey work and analysis, as part of the rangeland analysis effort. Similar tools were used to identify additional acres of potential habitat in both the LJCRP and in parts of Hells Canyon National Recreation Area. The model has been helpful in determining unlikely habitat for Spalding's catchfly, but not as effective in locating populations (Hustafa, pers. comm.). Approximately 26,000 acres of potential Spalding's catchfly habitat are modeled within the Forest Service lands in the Lower Joseph Creek watershed. The attached map displays areas where surveys have been conducted for this species within the LJCRP between

2003 and 2014. LJCRP will be analyzed for effects to Spalding's catchfly habitat, although no plants have been found to date.

Documented and Suspected R6 Sensitive Plants by Habitat

Each sensitive plant species has been assigned to one of each of the described habitat groups, however some of the species overlap into more than one habitat group. For species found in more than one habitat group, other habitat groups are noted in the text associated with that species, as well as in Appendix 2 Habitat Groups and Associated Species. It is assumed for the effects analysis that all plants growing in a particular habitat will have similar responses to restoration activities. Potential project impacts will be discussed in regards to the habitat type affected.

Coniferous Forest (Dry upland forest and moist upland forest PVGs)

The conifer forest habitat group includes all types of forest found in LJCRP, from dry ponderosa pine forest to the moist grand-fir, although most of the TES species listed below are found in mesic/moist conifer habitat. Warm dry forests can have ponderosa pine, Douglas-fir, or grand fir as their climax species. The understory is often dominated by low shrubs such as snowberry and birch-leaf spiraea. The main grasses and sedges found here are pinegrass and elk sedge. These forest communities are common throughout the Blue Mountains, including LJCRP. These plant communities are the areas that were historically heavily logged. Most of the large old ponderosa pine and Douglas fir have been removed. Fire exclusion has facilitated the growth of relatively thick stands of younger trees in many areas. Much of this habitat type is currently occupied by small (< 15" dbh) young trees. There are relatively few sensitive plant species that are suspected to occur in these areas. Most sensitive plants found in forested settings rely on slightly moister sites within the broader area.

Moist upland forest types include warm moist, cool moist, to cool wet plant associations. The dominant climax species of trees in these areas range from Doug-fir in warmer sites, to grand fir in moist areas, to lodgepole pine in higher elevation or cooler areas. Shrubs in these areas include Rocky mountain maple, Pacific yew, and big huckleberry. Moist site indicator herbs include twin-flower, queens' cup bead-lily, and heartleaf arnica. Several understory species in these forest types are culturally significant plants. They are collected for foods and herbal medicines. Morel mushrooms are also commonly found in these forest types. Although some morels are found in undisturbed areas, they often fruit more abundantly after disturbance due to animals, logging, or fire. This habitat type has been heavily altered due to timber harvest and fire suppression.

Cordilleran sedge (*Carex cordillariana*) and clustered lady's slipper (*Cypripedium fasciculatum*) are found in both moist and dry forests, though both plants need some shade, if not tree canopy, then shrub canopy. Northern twayblade (*Listera borealis*) is found in forested areas with high soil moisture such as mossy areas, forested swampy areas and along forested cold streams. Both the clustered lady's slipper and northern twayblade are in the orchid family and require some sort of mycorrhizal symbiont. Mycorrhizae are the underground portion of a group of mushrooms that grow on the roots of plants, taking nutrients from the host plant or tree in return for more efficient nutrient and water absorption by the plant or tree host. Moist forests are the habitat of naugheye liverwort (*Ptilidium pulcherrimum*), and in LJCRP it would be expected in the most

mesic forested habitats, likely on the lower boles and bases of trees. *Schistidium* moss (*Schistidium cinclidodonteum*) and bent stem moss (*Tetraphis geniculata*) both inhabit closed canopy, low light areas.

Potential threats to TES plants in coniferous forest habitat are: changes in light regimes, changes in soil moisture and microsite humidity due to loss of canopy closure; grazing, prescribed burning in the spring; soil disturbance from logging activities, road construction and maintenance. For clustered lady's slipper, fires severe enough to burn through the duff layer and into the organic horizons may damage the shallow rhizome/root system. Harrod et al. (1997) studied fire effects on *C. fasciculatum* on the Wenatchee NF. Their work suggests that the species cannot tolerate high-intensity fire that eliminates the duff layer, as indicated by a lack of roots and rhizomes found in excavations after fire. Cordilleran sedge can appear after fire events, but is believed to be sensitive to grazing. Opening canopy for cordilleran sedge, through mechanical treatment or fire may provide habitat, but may also make plants more susceptible to grazing.

Grasslands (Moist and Dry Upland Herbland PVGs)

Grasslands are composed of upland herbaceous vegetation dominated by grasses, and include both moist and dry bunchgrass habitats. Meadows and grass or grass-like dominated riparian areas are separate habitat groups. There are two grassland species documented in the LJCRP, green-band mariposa lily (*Calochortus macrocarpus* v. *maculosus*) and rough rabbitweed (*Pyrrcoma scaberula*). Both are regional endemics, meaning they are only found in our part of the world. There are thirteen records (Oregon Biodiversity Information Center) of rough rabbitweed in the Joseph canyon area, only one is in the project area, the other twelve are adjacent, with eleven on Nez Perce precious lands and one on BLM land. Rough rabbitweed is a composite (in the daisy/ sunflower family) that grows in deeper grassland soils with Idaho-fescue, often in transition zones between grassland and Doug fir-ponderosa pine stringers. It is remarkable that there is only one known population on USFS lands in the LJCRP project area. Nez Perce Precious Lands to the north are not grazed. It is unknown at this time what factors influence the presence or absence of rough rabbitweed. Green-band mariposa lily is a member of the lily family, and like many lilies has a corm or starchy bulb that helps this plant survive in the more xeric rockier parts of the Joseph canyonlands. Green-band mariposa lily is slightly more plentiful with ten populations within the LJCRP and another six populations on other land ownerships. This species is a seasonal round plant for the Nez Perce tribe. Both green-band mariposa and rough rabbitweed are concentrated at the very north end of the LJCRP, extending north into other land ownerships. The known site of *Pyrrcoma scaberula* is not near any project activities. Moist upland grasslands, those in the Idaho fescue plant associations, are also habitat for Spalding's catchfly. Rough rabbitweed sites were found during searches for the rare, endangered catchfly (Roger Ferriell, BLM botanist, pers. comm.). Spalding's catchfly is also found at the bases of toe-slopes in Idaho fescue grasslands (S. Geer, USFS botanist, pers. comm.), which can be drier sites than the rough rabbitweed sites. Flathead larkspur (*Delphinium bicolor*) is suspected in the project area and is found in dry meadow edges, sage scrub, open woodlands and woodland edges, and in seepy areas in dry forest.

For the most part, moist upland herbland is in good to fair condition within the project area. Dry upland herblands are generally in fair to poor condition in the project area. The generally poor condition of dry upland herblands may be due to drier soil conditions and shorter growing seasons in droughty years which may make recovery slower than recovery of moist upland herblands, even when management is changed in a positive direction. Moist grasslands and dry grasslands are both at risk from degradation due to grazing, which can include increases in size and connectivity of bare soil patches, loss of biological soil crusts, and increases in invasive non-native annual grasses and noxious weeds. The dynamics of season of burn and understory vegetation are not well understood, and the effects of low-severity prescribed fires may be different from high-severity prescribed fires or stand-replacing fires; for example, greater exotic species richness in high-severity fires (Bartuszevige and Kennedy 2009). Prescribed burning must be done in coordination with grazing so that grasslands have time to recover from burning prior to grazing. Idaho fescue is often suppressed for a few years after wildfire, after which it regains its former cover, while other species in Idaho fescue communities return to pre-fire cover in the first year after fire. Blue bunch wheatgrass plant associations typically regain pre-fire cover in the first year after fire (Johnson and Swanson, 2005).

Lithosols and Rigid Sagebrush Steppe

Lithosols are habitats with very shallow soils with little zonation on poorly weathered basalt or andesitic bedrock. While the soils can be saturated following spring snow melt, they dry quickly and are exposed to full sun for the entire growing season. Plants adapted to this harsh environment usually bloom and fruit early in the growing season. Basalt lithosols can be found in the dry upland shrubland potential vegetation group or dry upland herbland potential vegetation group. Basalt lithosols may also be found as small inclusions within a larger matrix of grassland and shrublands, as well as adjacent to forests. The common plant associations within the dry upland shrubland and dry upland herbland potential vegetation groupings are stiff sagebrush or low sagebrush/Sandberg's bluegrass, bluebunch wheatgrass/Sandberg's bluegrass or Sandberg's bluegrass/one-spike oatgrass. Countryman, et al (2012) found that conditions had improved in the dry shrubland potential vegetation group from 30 years earlier, but that this improvement has slowed. The dry herbland potential vegetation group has experienced invasion by nonnative plants resulting in conversion of some lands to exotic herblands ([Hann 1997](#)).

There are three sensitive plants documented from lithosol habitats: Wallowa needlegrass (*Achnatherum wallowaense*) is most consistently found on lithosols, while Snake River Daisy (*Erigeron disparipilus*), and Davis fleabane (*Erigeron engelmannii* v. *davisii*) can be found on both lithosols and dry grasslands. Wallowa needlegrass is known from Wallowa and Crook Counties in Oregon. Davis fleabane is endemic to southwest Idaho with disjunct populations in southwest Washington and northeast Oregon. Snake River daisy is found in Idaho near the Snake River and in northeast Oregon. Wallowa needlegrass, Davis fleabane, and Snake River daisy are all locally abundant in the project area, yet all should be considered narrow endemics, meaning they are not well distributed throughout the world, or even within the region.

Lithosol habitats within the LJCRP are frequently found between forested stringers on ridgetops and are generally flat, making them attractive locations for temporary roads, landings, and parking spots for logging equipment. Other threats to lithosol habitat include livestock trampling,

grazing and trailing especially before soils have dried sufficiently; salt blocks, and invasion of non-native invasive grasses such as ventenata (*Ventenata dubia*), cheatgrass (*Bromus tectorum*) and medusahead (*Taeniatherum caput-medusae*).

Cliffs, rock outcrops, and talus

Cliffs and rock outcrops have vertical faces where very few plants are able to survive. Talus is accumulated boulders and cobbles at the base of cliffs or on steep slopes. Many of the species included in this habitat group, such as Hells Canyon rockcress (*Arabis hastatula*), candle-snuffer moss (*Encalypta brevipes*), membrane-leaved monkeyflower (*Mimulus hymenophyllus*), and violet mock brookfoam (*Suksdorfia violacea*) are found primarily on cliffs and outcrops. Two of the suspected species in this group have a broader range of habitats, but include rock outcrops. Sharp tipped twisted moss (*Tortula mucronifera*) can be found on soil and on tree roots, as well as sheltered ledges and crevices of rock outcrops and cliffs. Many flowered phlox (*Phlox multiflora*) grows on basalt cliffs, rocky outcrops, as well as rocky openings in dry forest. Rock outcrops are assumed to be in good condition with a stable trend because they are primarily composed of rock thus resistant to soil compaction and erosion; however, plants growing on rocky areas in forests may be vulnerable during logging operations activities such as felling and yarding. Steep to acute slopes, unstable footing, and scant vegetation of talus, cliffs, and rock outcrops make them generally unattractive to wild ungulates and livestock. Road construction and potential as rock quarries are the primary management concerns.

Springs and seeps

Springs are points where groundwater emerges and flows. Groundwater also feeds seeps, but seeps do not produce perennial flow. Springs and seeps are typically small, but are well distributed on the Wallowa-Whitman National Forest. Seeps are generally less well documented on the forest. Seeps and springs are often developed for cattle troughs. Many of these areas have been dewatered and/or trampled due to these developments historically. Some developed springs now have fences to protect the water source. These areas provide important habitat for Bolander's spikerush (*Eleocharis bolanderi*) and banded cordmoss (*Entosthodon fascicularis*), both of which can be found in seasonally wet areas such as seeps and intermittent streams.

Moist Meadows

Moist meadows are typically saturated in the spring, but by mid to late summer the water table has fallen below the soil surface. In LJCRP there are many moist meadows interspersed within forested areas. Several sensitive plant species are found in the transition zone between the wet or moist meadows and the surrounding forest or otherwise drier areas, such as meadow moonworts (*Botrychium crenulatum*, *B. hesperium*, and *B. lunaria*). Most of the meadow moonworts can also be found in open forest. Geyer's onion (*Allium geeyeri*), annual dropseed (*Muhlenbergia minutissima*), dwarf Phacelia (*Phacelia minutissima*), and Douglas' clover (*Trifolium douglasii*) can be found in moist meadows. Dwarf Phacelia and Douglas' clover can also be found along streams (see Appendix 2). Main threats are road or trail construction or maintenance,

recreationists, off highway vehicles, forage seeding, poorly designed or broken water developments, changes in the water table, possibly logging and burning projects, and grazing.

Wet meadows, riparian

Wet meadows are saturated throughout the growing season with the water table at or slightly below the soil surface. Oregon semaphore grass (*Pleuropogon oreganus*), Columbia cress (*Rorippa columbiae*), and Lowland toothcup (*Rotala ramosior*) grow in open areas with saturated soil. Mountain grape-fern (*Botrychium montanum*) and American globeflower (*Trollius laxus ssp. albiflorus*) grow in forested areas with saturated soil. Several sensitive plant species are also found in the transition zone between the wet or moist meadows and the surrounding forest or otherwise drier areas, see the species lists and habitat descriptions of the moist meadow and wet meadow/riparian habitat categories in Appendix for details.

Riparian areas also have water close to or at soil surface. Many of the riparian areas create high humidity sites which provides excellent habitat for non-vascular plants (mosses, liverworts), and lichens. Consequently, many rare non-vascular plants are found in riparian areas. Several sensitive plant species are also found in the transition zone between the riparian zones and the surrounding uplands.

Both wet meadows and riparian areas share threats from changes in hydrology, trampling and browsing, and invasive wetland plants, such as reed canary grass.

Environmental Consequences

Project Summary

The Lower Joseph Creek restoration project is focused on creating a more resilient over-story with structure and composition trending towards historic range of variability. The goal is to reintroduce fire in its natural role to this landscape. Understory structure and composition is of concern for this restoration effort. The following activities from the proposed action will be included in this analysis because they are likely to create disturbance that may reduce viability, habitat, populations or individuals of TES plants:

- Thinning, and mechanical fuel treatments across approximately 20,000 acres
- Thinning of largely younger trees across an additional 5,000 acres
- Prescribed burning of hazardous fuels, where ecologically appropriate, on up to 90,000 acres
- Riparian and flood plain restoration which may include road closure or modification, channel reconstruction, fencing, planting, conifer removal, in-stream structure placement, and bank stabilization.
- Approximately 1.5 miles of new system road will be constructed; 24 miles of system road will be reconstructed; and 26 miles of new temporary roads will be constructed.
- Connected actions included in the analysis are: road maintenance, and hazard tree cutting or removal. Fuels associated with silvicultural treatments (activity fuels) will be treated with

a suite of available tools including, but not limited to, mastication, removal, pile and burn, cutting and scattering limbs, and prescribed fire.

Spatial and Temporal Context for Effects Analysis

The spatial context for this analysis is the project planning area. This scale is large enough to identify trends to sensitive species that could result from implementation this project. Since plants do not generally move over large areas quickly, and no downstream effects are anticipated, it is not necessary to analyze effects to sensitive plants outside of the planning area.

The temporal context for effects analysis includes short term and long term effects. Short term effects for this analysis are considered to be one to two years after project implementation. These would generally be from direct effects such as ground disturbance or incineration. Long term effects for this analysis are considered to be longer than two years. These effects would generally be from indirect effects such as changes in sunlight, hydrologic regimes, and changes in animal grazing patterns and intensity.

For the cumulative effects analysis, the spatial context being considered is the project area. Cumulative effects are discussed in terms of wildfire and vegetation management activities that have occurred since 1985 and as changes in the existing condition due to present and foreseeable activities, including the effects of the alternative being discussed. The time frame considered is approximately 15 years in the future at which time the majority of the actions proposed will have been completed and the vegetation response to these actions has occurred.

Basis of Effects Determinations

The four possible effect determinations for sensitive plants are outlined in Forest Service Manual 2670. These definitions were used to guide the determination of effects:

- **No impact (NI)** When sensitive species occur in habitats which are not expected to be directly or indirectly affected in any way. This is also used for known specific existing populations where no project activities are proposed, or the population is buffered or otherwise protected from project activities.
- **Beneficial impact (BI)** When sensitive species, and their potential habitats, are expected to be favorably affected by a particular alternative.
- **May impact individuals or habitat (MIIH)** When sensitive species, and their potential habitats, occur that could possibly be negatively affected. This determination is used in cases where there is un-surveyed potential habitat, or where potential impacts are uncertain, or considered to be relatively minor. Additionally, this recognizes that even the most substantial impacts of the proposed action will not contribute to a trend toward listing the species under the Endangered Species Act. The effects are expected to be minor enough that they will not cause a loss of viability of the species in the planning area.
- **Will impact individuals or habitat and may contribute to a loss of viability (WIFV)** When sensitive species and potential habitat will most likely be negatively affected by the project. This determination is used in cases where negative impacts will clearly occur, and they are of a magnitude that they may contribute to crossing a threshold leading to Federal Listing under the Endangered Species Act.

Alternative 1 – No Action

Effects

Under Alternative 1, the no action alternative, no management except fire suppression and implementation of pre-existing decisions would occur. Both known sites and possible undetected occurrences of threatened, endangered or sensitive plants would not be impacted by project activities. Sensitive species growing in partial shade in forest could lose habitat as openings fill with trees in the absence of natural fire cycles. Increases in ladder fuels resulting from fire suppression would increase the risk of larger hotter wildfires. Lack of fire and increased canopy cover would benefit some understory species requiring cool moist habitat with low light and large coarse woody debris, such as mosses, liverworts and fungi. Meadows and grasslands would be at risk for increased ingrowth of conifers and shrubs. Most of the TES species included are adapted to wildfire within the range of variability. Fire adaptations for plants include avoidance, adaptation, and survival. Avoiders, are plants that grow in areas that don't typically burn, such as rock outcrops or areas with high water tables, many sensitive plants are in this group. Adapters are able to grow back quickly after burning, many sprout from the root crown (where the stem and root meet at soil level). Survivors have deep roots or tubers that persist after fire, an example is the green-band mariposa lily. In the absence of natural fire return intervals, fires may burn more intensely over larger areas and understory plant species may be at risk in forested settings. Grassland plants are at risk in areas where fire burns hot enough to kill native vegetation, creating openings where invasive grasses such as *Ventenata*, cheatgrass and medusa head can thrive. In the absence of fire, grass and shrubs used by ungulates become less abundant, concentrating grazing and browsing on smaller portions of the landscape, such as areas with shallow soils/ lithosols, riparian areas, and wet meadows; all of which are sensitive plant habitat. Inventoried Roadless Areas and Research Natural Areas (MA-12) both name the objective of conserving habitat for TES species. MA-9, HCNRA Dispersed Recreation has the objective of enhancing native vegetation. Although the emphasis is on forest structure and wildlife, MA-15 Old Growth Forest objective of maintaining habitat diversity benefits shade tolerant TES plants such as northern twayblade, many bryophytes and fungi. All management areas would remain untreated under the no action alternative. Effects by management area would remain unchanged, possibly increasing the risk of loss of some TES and native plant habitat to uncharacteristic wildfire.

Alternative 2, the proposed action and Alternative 3

Since both of the action alternatives include similar activities and project design features, the analysis will focus primarily on a general discussion of potential effects. The individual alternatives will be compared in relation to the amount of area proposed for the various activities.

Design Criteria and Mitigation Measures

TES Plants

- TESP-1 Identified treatment units falling outside of areas already inventoried for the presence of TES plant species will be evaluated for the need for further survey work. Those areas will be cleared for treatment through documenting the results of further surveys or through documenting the rationale why further surveys would not be necessary. This work will be overseen by the zone botanist.
- TESP- 2 Known TES plant populations will be identified as needed on the ground and or on maps for contract implementation prior to road grading and other road improvements, designation of parking areas and landings, and logging, with work overseen by a journey level botanist.
- TESP-3 No road construction activities, or staging areas (such as landings, parking, piling) on non-forested habitats such as lithosols, grasslands, or meadows.
- TESP-4 Avoid disturbing Davis fleabane/Snake River Daisy populations adjacent to Cold Springs Road (FS 4680) and feeder roads such as 4680200, 4680208, 4680212, 4680220, 4680219, and 4680170.
- TESP-5 Avoid ground disturbing activities on known TES plant sites.

Special Habitats

- BIO –1 Avoid disturbing natural seeps and springs, wet meadows, moist meadows, this includes removing shrubs and trees.
- BIOD–2 Leave tree islands in coniferous forest for conservation of native mycorrhizal fungi, yew, wet areas when these features are found or suspected in units. Mycorrhizae should always be suspected in coniferous forest units.
- BIOD–3 Maintain woody debris as per guidance from eastside screens to provide habitat for nonvascular plants and fungi.
- BIOD–4 Avoid yarding over rock outcrops and talus slopes. Leave trees and shrubs adjacent to rock outcrops, talus as a microclimate buffer.

Direct and Indirect Effects for Alternatives 2 and 3

Direct and Indirect Effects to Federally Listed, Proposed and Candidate Plants

Currently there are no known Spalding's catchfly populations within the project area. Direct effects of fire and commercial thinning as well as indirect effects from invasive non-native plants and grazing were considered because they have the potential to degrade or reduce potential habitat for Spalding's catchfly. However, design criteria incorporated into the project proposal will preclude direct and indirect effects to Spalding's catchfly habitat from project activities. Connected actions including road maintenance, hazard tree removal, and various forms of hazard fuels treatments were considered and project design criteria would preclude effects from connected actions. Project design criteria include the Wallowa-Whitman National Forest Land Resource Management Plan and HCNRA CMP standards and guides for TES plants; specifically to maintaining all native communities and ensuring that no natural species shall be eliminated during vegetation management. Specific project design criteria are: No road construction activities, or staging areas (such as landings, parking, piling) on non-forested habitats such as lithosols, grasslands, or meadows; and clearance for TES plant populations will be done prior to project activities. Known TES plant populations will be flagged prior to road grading and other

road improvements, designation of parking areas and landings, and logging, with work overseen by a journey level botanist. Detailed analysis for Spalding's catchfly can be found in the botanical assessment in the appendices.

Direct and Indirect Effects to R6 Sensitive Plants

Coniferous Forest

There are no known TES plants documented from coniferous forest habitat in LJCRP. Coniferous forest habitat would be directly affected through ground disturbing activities associated with vegetation management, including commercial and non-commercial thinning, biomass removal, and activities associated with vegetation management such as yarding, slash piling, grinding, or scattering. Indirect effects to forested areas resulting from logging and thinning would be loss of canopy closure and resulting changes in microclimate, altering the hydrologic regime and changing light intensity. Mycorrhizal fungi form symbiotic relationships with host plants; the fungi grow on the roots of the plants, taking some nutrients, but also assisting in nutrient and water absorption to the plant. Clustered lady slipper and northern twayblade are both in the orchid family and probably require mycorrhizal fungi to establish, as do most conifers and many understory plants. In addition to changes in canopy closure and associated effects, thinning removes host trees and, at least initially, understory plants. Species of mycorrhizal fungi can associate with different hosts, and mycorrhizal communities have different species composition depending on what host species are available for example, coniferous forests with huckleberry species have a different mycorrhizal composition than grasslands.

Vegetation management may also alter the interaction of herbivores and plants. By opening up the canopy of the forest, grasses and other palatable plants may increase. This may in turn increase grazing activity in the treated areas. Conversely, logging-created slash may impede travel by ungulates. Forest Standards and guides for diversity such as providing an ecologically sound distribution and abundance of plant and animal communities at stand, basin and forest levels; as well as allowing for all natural species to function following vegetation treatments would be followed. Project design criteria TES-1, clearance surveys for TES and invasive plant populations; BIOD-2 leaving tree islands; and BIOD-3, maintain coarse woody debris; would prevent the loss of any currently undetected TES plant populations, including fungi and bryophytes.

Prescribed fire following thinning to remove activity fuels would help reduce fuels in the understory and create openings for understory plants; however, burning piles also creates openings for invasive non-native plants. To mitigate for this effect in forested areas follow project design criteria including INVP-1, treat noxious weeds with approved methods as found prior to ground disturbing activities; INVP-3, avoid prescribed fire and ground disturbance where invasive plant populations are found; and INVP-5, seed areas where piles are burned using native seed as per FSM 2070.3. If broadcast burning is implemented, late summer to fall burning, or burning when plants are not actively growing, is recommended.

See activities common to all habitats for analysis of road reconstruction, road maintenance, temporary road construction, and road closure.

Many of the areas proposed for vegetation treatment activities were not specifically surveyed for this project. Following forest standards and guides for TES plants and maintaining biodiversity, and using project design criteria would greatly reduce the risk of losing populations of sensitive plants in forest habitats; however, there is the chance that undiscovered populations of sensitive plant species may be impacted. Project activities may impact individual plants or habitat, but implementation of this alternative should not increase the need for Federal listing of any sensitive species. In general the suspected sensitive plant species in LJCRP are found in moist upland forest rather than in dry upland forest. Direct and indirect effects May Impact Individuals Or Habitat, But Will Not Likely Contribute To A Trend Towards Federal Listing or Cause A Loss Of Viability To The Population Or Species (MIIH).

Grasslands

Grasslands include both moist and dry bunchgrass habitats. There are two grassland species documented in the LJCRP, Green-band mariposa lily and rough rabbitweed. Both are regional endemics, meaning they are only found in our part of the world. There are thirteen records (Oregon Biodiversity Information Center) of rough rabbitweed in the Joseph canyon area, only one population is in the project area, the other twelve are adjacent, with eleven on Nez Perce precious lands and one on BLM land. The known site of rough rabbitweed is just below (north of) Allen Springs enclosure, which is not near any proposed thinning units, high priority prescribed burning, or any other activities associated with the LJCRP. The populations of green-band mariposa lily are slightly more plentiful with ten populations within LJCRP and another six populations on other land ownerships. Both green-band mariposa lily and rough rabbitweed are concentrated at the very north end of the LJCRP, extending north into other land ownerships. Green-band mariposa and rough rabbitweed tend to grow in grassland between stringers of forest.

Two green-band mariposa lily populations are adjacent to units that will be treated in Alternative 2, but not treated in Alternative 3, because the green-band mariposa populations are within the Wildhorse IRA and in the HCNRA at the end of the TeePee Butte Road. The units are planned as helicopter based logging systems. Potential direct effects to green-band mariposa lily would include crushing by tree felling, as well as some soil disturbance from removal. Indirect effects could be negative in the case of spreading invasive annual grasses and noxious weeds through ground disturbance and prescribed fire. Positive indirect effects could be the removal of conifers encroaching into grassland stringers and nitrogen release as a result of prescribed burning. HCNRA CMP standards and guides to protect and manage habitats and populations of TES plant species to ensure their continued existence (TES-01, TES-02, and TES-G2) would be observed. Gra-01: Manage grassland vegetation to ensure continued ecological function and sustainability of native ecosystems. Maintain and/or restore the ecological status of grassland communities to their PNC recognizing their HRV, from the HCNRA CMP; is specific to maintaining grassland ecosystems and would be used as guidance for conserving native grasslands while implementing grazing. Project design criteria to protect grassland stringers and sensitive plant habitat in grasslands are TESP-2 No road construction or staging areas on non-forested habitats; and INVP-3, avoid prescribed fire and ground disturbance from vegetation treatment and related activities where invasive non-native species are found. Direct and indirect effects to grasslands May Impact Individuals Or Habitat, But Will Not Likely Contribute To A Trend Towards Federal Listing or Cause A Loss Of Viability To The Population Or Species (MIIH).

Table 1. The following table shows the locations of known sites of green-band mariposa lily in relation to areas where commercial thinning will occur. Both treatment units 52A and 29 are in inventoried roadless areas (IRAs), meaning that Alternative 2 silvicultural treatments could impact these TES sites, but Alternative 3 silvicultural treatments would not impact these sites. Both units are listed in the “high” category for prescribed fire, meaning prescribed fire is a high priority for these units under both alternatives.

FS Site ID	Species	Unit
0616020102	green-band mariposa lily	29
0616020106	green-band mariposa lily	52A

Lithosols

There are three sensitive plants documented from lithosol habitats: Wallowa Needlegrass, Snake River daisy, and Davis fleabane. Snake River daisy and Davis fleabane occupy the same type of habitat and are virtually indistinguishable in the field, thus for this analysis will be considered together as the white fleabanes. During the course of the 2014 TES plant surveys many new populations of Wallowa needlegrass and white fleabanes were discovered, as well as extensions of previously documented populations. The white fleabanes found in 2014 have not yet been identified to species and were all tentatively lumped into Davis fleabane. Most of the new Wallowa needlegrass sites are extensions of existing sites. Wallowa needlegrass is found south of Red Hill. The white fleabanes are found north of Red Hill, with the largest concentrations in the Cold Spring Ridge vicinity and Wildhorse Ridge, both of which are in HCNRA. White fleabane populations are found in both the Wallowa District and HCNRA. Wallowa needlegrass is found only on the Wallowa District. Alternative 2 will have the most activities near lithosol habitat, although the activity areas in Alternative 3 are still substantial. Direct effects to TES plants found on lithosols are crushing plants with machinery, burying plants during grading, landing construction, damaging plants during felling and yarding, and burying plants under slash piles. Indirect effects are soil compaction and spread of noxious weeds and invasive annual grasses (Brooks 2009, Dewey 2013). Wallowa-Whitman LRMP standards and guides as well as HCNRA CMP standards and guides would be followed for the white fleabanes, and LRMP would be followed for Wallowa needlegrass. Both the LRMP and the CMP provide guidance to maintain natural plant communities and to maintain all native species within projects (LRMP 4-30 to 4-31, CMP TES-01, BIO-S1).

Project design criteria TESP-2, No road construction or staging areas on non-forested habitat; and TESP-3, Avoid disturbing Davis fleabane/Snake river daisy populations adjacent to Cold Springs Road and feeder roads will help prevent negative effects related to road construction, landings and piling. RANGE-5, The botanist, invasive species specialist and range manager will work together to determine whether prescribed fire or other vegetation restoration activities will require resting portions of the pasture treated; would be used to insure the recovery of native plants, and habitats as well as biological soil crusts. With mitigations both alternatives May Impact Individuals Or Habitat, But Will Not Likely Contribute To A Trend Towards Federal Listing or Cause A Loss Of Viability To The Population Or Species (MIIH) in Lithosols in LJCRP.

Table 2. The following tables summarize the locations of lithosols with Wallowa needlegrass and the white fleabanes. The x's show what type of logging system could impact each known TES site listed. For example, for Wallowa needlegrass, site 616020255, both ground based logging and skyline logging systems are planned for both Alternative 2 and Alternative 3. In the case of Snake River daisy, site 616042401, thinning is planned under Alternative 2, but not Alternative 3.

Known Sites (FS_Site_ID)	Alternatives 2 and 3				
	Ground	Helicopter	Skyline	Thin	Roads
Wallowa needlegrass					
616020255	x		x		
616020257	x		x		
616020500		x			
616020501		x	x		
616020502			x		
616020504	x				
616020505					temp rd off 460500
616020506	x	x	x		4600340
Snake River daisy					
616042401				x (Alt 3 No Tx)	
Davis fleabane					
616020243	x		x		
616020244	x				
616020247	x		x		
616021354			x		
616042086	x	x	x (Alt 3 no tx)	x	4680, 4680219, 4680220

Table 3. The following table shows new TES plant sites in Lithosol habitats that could be affected by logging operations. As with the table above, x's show the logging system planned for use in the location of the TES site. In this case there are no TES site numbers, unit numbers are used to indicate where the new site is located.

New Sites (Unit Numbers)	Alternatives 2 and 3			
	Ground	Helicopter	Skyline	Thin
Wallowa needlegrass				
120			x(no tx in Alt 3)	
121		x	x	
205			x	
206			x	
Davis fleabane				
5	x			
9			x(no tx in Alt 3)	
12		x		
13		x(no tx in Alt 3)		
16	x(no tx in Alt 3)			
18	x			
24	x	x	x	
110	x	x	x	
148		x		
1074				x(no tx in Alt 3)

1134				x(no tx in Alt 3)
1136				x(no tx in Alt 3)
1137				x(no tx in Alt 3)
1139				x(no tx in Alt 3)

Rock Outcrops, Talus, Scree

There are no documented species from rock outcrops, talus, and scree. Habitat could be degraded through thinning activities such as felling or yarding near forested rock outcrops, which could kill plants living there. Prescribed fire generally does not burn in this habitat type, due to the low fuel levels. The main activity that may impact this habitat type is rock quarrying, or road construction. The removal of rocks through quarrying or road construction could directly kill plants by excavating them. Quarrying may potentially indirectly impact this habitat by exposing roots of plants that are not directly removed.

Project design criteria that protect rock outcrop habitat would provide a high level of protection to these habitats. BIOD-4, avoid yarding over rock outcrops and talus slopes. Leave trees and shrubs adjacent to rock outcrops, talus as a microclimate buffer. Because the project design criteria would protect cliffs, rock outcrops, and talus in the project planning area, the implementation of Alternative 2 or Alternative 3 should have No Impact (NI) to cliffs, rock outcrops, and talus habitats, or to any sensitive species that may occur there.

Moist Meadows, Wet Meadows, Riparian, Springs and Seeps:

There are no documented species from moist meadows, wet meadows, riparian areas or springs and seeps. For Alternative 3, riparian areas and other moist to wet habitats are protected by INFISH buffers. Along Category 1 and 2 streams, a minimum 100 foot buffer would be maintained. The only treatments within a Category 1 RHCA is in Swamp Creek, as part of Alternative 2, where lodgepole will be thinned. Category 4 RHCAs (intermittent streams) will be treated in alternative 2, and there will be a 25 foot variable width no harvest and no equipment buffer established during implementation by a hydrologist or fisheries biologist. Both the LRMP and the CMP provide guidance to maintain natural plant communities and to maintain all native species within projects (LRMP 4-30 to 4-31, CMP TES-01, BIO-S1). Seeps and springs would be protected from logging and thinning activities with project design criteria such as: BIO -1, avoid disturbing natural seeps and springs, wet meadows, moist meadows, this includes removing shrubs and trees; except in Swamp Creek. Swamp Creek moist meadow habitat is infested with the invasive plant meadow hawkweed, project design criteria INVP-4: Do not disturb Meadow Hawkweed in Swamp Creek, or other locations within the project area, through ground disturbance that will create bare soil or move seeds or vegetative parts of meadow hawkweed plants to new locations; would be followed until the forest Invasive Plant EIS is finalized. Machinery used in Swamp Creek Meadow must be washed prior to leaving site. If standards and guides and project design criteria are followed, direct and indirect effects are unlikely in these habitats.

Activities common to all habitats

Road maintenance, decommissioning, and new construction can directly kill or dislodge sensitive plants. Road work and new roads may also indirectly lead to an increase in grazing activity due to the increased ease of travel for animals on the roads. New and improved roads may also lead to increases in the amount of off-road driving to collect firewood, camp, and retrieve game. Road maintenance activities contribute to the movement of invasive species along road shoulders and ditches, and to and from quarry and waste disposal areas. Invasive species may potentially outcompete or prevent the recruitment of new sensitive plant populations. Project design criteria are included that should help to reduce the chance of increasing invasive plant abundance in the project planning area. Closure of temporary roads and currently closed roads that would be reopened should help to reduce these impacts in the long term. The risk would only occur during the time that the sale is active until the roads are reclosed, and or, decommissioned.

Potential indirect effects of road construction include increased vehicle use on the new road and adjacent areas, increases in invasive plants, and changes in water movement across the landscape. Road decommissioning and building is planned across limited areas in these habitat types. Project design criteria require areas with high potential habitat for sensitive plants may be surveyed for rare plants before project implementation.

Prescribed fire or slash pile burning could scorch sensitive plant individuals within the fire area, and also may kill plants under and directly adjacent to slash piles. Fire line construction has the potential to directly kill or dislodge sensitive plants in the area that is denuded. Natural fire generally occurs in mid to late summer. Much of the prescribed fire is done in spring or early summer. This is the time of year when plants are actively growing. It is unknown if burning sensitive plants when they are actively growing would cause more mortality than when they may be senescent later in the summer. Prescribed fire after silvicultural treatments would remove understory vegetation, woody debris, and litter, impacting microclimate as well as soil temperature and moisture.

R6 sensitive plant Davis Fleabane is found in both Joseph Canyon IRA and Wildhorse IRA. It straddles the Cold Springs cutoff road on the northeastern side of the project area on the eastern side of Wildhorse IRA. Davis fleabane's habitat is open shallow soil to rocky areas in grasslands. The only site for rough rabbit weed in the project area is in the Joseph Canyon IRA. Rough rabbitweed grows in grasslands adjacent to forested stringers. Nez Perce mariposa lily is another sensitive plant species that occupies grasslands, often near forested stringers, and is found in the IRAs. The only other documented sensitive plant in the project area is Wallowa needlegrass which is found in the southwestern part of the project area and has no documented sites in the IRAs. It is found in rocky shallow soil (lithosol) areas often with rigid sagebrush and Sandberg's bluegrass. Lithosols in LJCRP seem to be found as dry forest inclusions and all outside of IRAs in the project area. The proposed action will include stand improvement treatments in IRAs, but no commercial harvest. The main threats to grassland sensitive plants would be from commercial logging activities and road building and reconstruction. Reintroduction of natural fire cycles should benefit all native plants if project design criteria are followed. Grazing is an ongoing activity in addition to LJCRP proposed activities and will contribute to cumulative effects of LJCRP, less so if project design criteria are followed, including the following: TESP-2 No road construction activities, or staging areas (such as landings, parking, piling) on non-forested habitats such as lithosols, grasslands, or meadows; BIO –1 Avoid disturbing natural seeps and

springs, wet meadows, moist meadows, this includes removing shrubs and trees; BIOD–2 Leave tree islands in coniferous forest for conservation of native mycorrhizal fungi, yew, wet areas when these features are found or suspected in units. Mycorrhizae should always be suspected in coniferous forest units; BIOD–3 Maintain woody debris as per guidance from eastside screens to provide habitat for nonvascular plants and fungi.

Comparison of Alternatives 2 and 3

Alternative 3 would be similar to Alternative 2, except there would not be commercial thinning in RHCAs, IRAs, and MA15. No trees greater than 21” would be harvested, except for safety or administrative reasons. Alternative 2 would treat about 22% of the project area while Alternative 3 would treat about 13% of the project area. Silvicultural treatments would be expected have less impacts under Alternative 3 than under Alternative 2.

PACFISH buffers would be followed where category 4 RHCAs are present within commercial units. Non-commercial thinning could occur in category 4 RHCAs as per the Blue Mountains Project Design Criteria (PDCs). The potential impacts to riparian dependent communities would be less for Alternative 3 than for Alternative 2, due to the fact there would only be 749 acres of non-commercial thinning in RHCAs.

Prescribed fire would differ in only in activity fuels burned associated with units treated. Alternative 3 would have less acres burned as a result of less units treated.

The road network would meet public access needs identified by Wallowa County, meaning more roads would be left open for passenger vehicle use in Alternative 3. However, the impact of roads to TES species under Alternative 3, would be no greater than it is under the existing condition. Under both Alternative 2 and Alternative 3, all roads considered for closure would remain open to ATV use. There would be slightly less miles of roads used for haul routes under Alternative 3 (about 1.5% less miles) and temporary roads would be the same for both Alternatives.

Both Alternative 2 and Alternative 3 would protect all known populations of sensitive plants from ground disturbing activities through project design criteria and forest plan direction. A botanist would be consulted if any of the areas where the populations occur are within prescribed burn areas. Alternative 2 and Alternative 3 may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species (MIH) in forested habitats, grasslands, and lithosol/rigid sagebrush/shallow soils habitats. In other habitats considered, where there are no documented species and protection of TES habitats through policies and mitigations, and where disturbance is not expected, both Alternative 2 and Alternative 3 would be expected to have No Impact (NI) on TES habitat or species.

Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

Climate Change

Changes in the timing of streamflow reduce water supplies for competing demands. Increasing wildfire, insect outbreaks, and tree diseases are already causing widespread tree die-off (National Climate Assessment, 2014). Dodson and Root (2013) found that all future climate scenarios in

their study projected increasing temperature and climatic moisture deficit (CMD) in coming decades (e.g., from 4.5% to 29.5% higher CMD by the 2080's compared to the 1971-2000 average), even in scenarios where growing season (May-September) precipitation increased. Their results suggest increasing temperatures and moisture limitation could facilitate longer-term (over a decade) transitions toward exotic-dominated communities after severe wildfire when a suitable exotic seed source is present. All climate scenarios run for LJCRP show a landscape becomes dominated by mountain big sage, and warm-season shrubland. Grasslands nearly disappear. Without active management, conifer forest of all types decline to less than 10%, although one model shows Ponderosa pine as a co-dominant with shrublands. Modeling by Hemstrom (2014) for the LJCRP shows that thinning and prescribed fire will conserve forests to mid-century. Given the dry conditions predicted in the project area, an increase in non-native annual grasses is likely. However, vegetation adapts to changing climate in various ways. Individual plants adjust to climatic changes through phenotypic plasticity via traits like growth phenology and biomass allocation. Populations adapt through natural selection of traits based on genetic variability within the population and through long distance pollen or seed dispersal. Species also adapt to changing climate through migration, resulting in establishment of new populations in favorable habitats and the extirpation of populations from unfavorable habitats (Peterson, et al 2014). In a study of modeled response to climate change for rare plants in California, 60 of 156 species were predicted to have declines in climatic suitability, regardless of modeling technique; however, species in topographically dissected landscapes may be less vulnerable to climate change because they can find suitable climates locally as climate changes (Anacker, et al, 2013). Given the complex topography in LJCRP, perhaps the majority of understory species will be able to persist on the landscape, though at a reduced scale.

Grazing, Timber harvest, Fire, and Roads

In the past, present, and reasonably foreseeable future, there have been, and will continue to be, projects and activities within the planning area that may cause impacts to sensitive plants and their habitats. Projects and activities that create ground disturbance, change vegetative composition, and change domestic animal grazing patterns may potentially cause detrimental impacts to sensitive plant populations and habitats. These actions include road construction, timber harvest, fuel reduction treatments (landscape and pile burning, lopping and scattering of slash), fire suppression, recreation development, mining, and livestock grazing. Restoration efforts such as road decommissioning and stream improvements may potentially impact sensitive plant populations and habitat. Road construction and recreation developments have permanently altered native plant habitat in limited areas of the LJCRP.

Livestock grazing has occurred in most of the project planning area for decades and has resulted in changes in plant communities, especially in non-forested and riparian areas. Grazing has a direct effect on plants through plant herbivory, and trampling. Grazing can have an indirect effect on plant species by causing changes in shade, soil compaction, soil disturbance, smothering by cow pies, and alteration of nutrient cycling. The degree of impact to plant species from grazing is related to the timing, duration, and intensity of the grazing action, as well as the individual characteristics and habitat requirements of the species. Grazing will continue to occur in the project planning area.

Non-native Invasive Plants

A court decision in 2002 concluded that the Wallowa-Whitman National Forest noxious weed control environmental assessment was insufficient under NEPA (USDA Wallowa-Whitman NF. Page 2. 2013). The forest has been limited to non-chemical methods since this ruling. Because of this restriction on treatment methods, and limited funds, non-native invasive plants have undoubtedly increased in the project planning area over time. Non-native invasive plants may potentially outcompete and dominate sensitive plant habitat. Some of the alternatives proposed in the Invasive Plant EIS add the use of herbicides. If one of the alternatives that propose the use of herbicides is selected (and implemented), the cumulative effects from non-native invasive plants should be reduced over time. Currently, a supplemental EIS for the treatment of invasive species is being drafted, as directed by the court.

The historical abundance and distribution of sensitive species on the Forest is not known. Past activities have likely affected their current abundance and distribution. Beginning in approximately 1990, botanical surveys and biological evaluations were conducted for most Forest Service projects planned and implemented on the forest. As a result, activities conducted since 1990 have been designed to reduce impacts to sensitive species.

Cumulative Effects

Since 1990, protection and management of sensitive species and their habitats (in the form of project design criteria, avoidance, or other mitigation) have been included in the design of all projects following Forest standards and guides in the Wallowa-Whitman National Forest Land and Resource Management Plan; and in direction and policy set forth in the FSM 2670. This has, and will continue to, reduce the potential of cumulative effects to sensitive plant populations and habitats. Prescribed fire, thinning, grazing, and road maintenance are activities that have occurred and will likely occur in the foreseeable future.

Wildfire is an essential natural disturbance within the Lower Joseph Watershed, as well as the adjacent canyonlands of Hells Canyon and the Grand Ronde drainages. Four large wildfires have spilled into Lower Joseph Watershed from Hells Canyon: Cache Creek (2012), Jim Creek (2006), Jim Creek (2000), and Teepee Butte (1988). These wildfires cover around 70% of the HCNRA portion of LJCRP. The white fleabane has eight populations that are in past wildfires and are in proposed units. Joseph Creek/Starvation Ridge (1986) burned about 31,000 acres in the Wallowa District portion of the LJCRP. Four populations of white fleabane and one population of Wallowa needlegrass are within the perimeter of the Joseph Creek/Starvation Ridge Fire.

Silvicultural treatments are part of the landscape. From 1995 to 2013, LJCRP has had around 2000 acres of thinning and around 2400 acres of logging, including salvage and sanitation, less than five percent of the landscape. When activities from the last thirty years are mapped, it becomes apparent that the same areas have been treated repeatedly. About 45% of the LJCRP commercial treatments will return previous treatment areas. While there are no documented sensitive plant species within coniferous forest, the sensitive white fleabane and Wallowa needlegrass grow at the edges of treatment areas that have been entered a number of times. About 1060 acres of white fleabane (about 50% of the site acres in LJCRP) are within 300 feet of units in Alternative 2 that have had multiple entries. Road grading, piling and landings associated with past and proposed future vegetation treatments is the main concern. The area of primary

concern is the Cold Springs Road area. This area has also experience multiple wildfires (Cache Creek, both Jim Creek fires, and Teepee Butte fire). Because the white fleabane grows on rocky areas, fire most likely has little impact. About 22 acres of Wallowa needlegrass (25% of the site acres in LJCRP) is within 300 feet of units in Alternative 2 that have had multiple entries. Road grading, piling and landings associated with past and proposed future vegetation treatments is the main concern. Only one population is within the Joseph Starvation (1986)/ Starvation (1994) fire perimeter. The Wallowa needlegrass is in the southeastern portion of LJCRP, south of Red Hill. Dewey (2013) noted that Wallowa needlegrass does not compete well with other grasses. Wildfire likely does not impact Wallowa needlegrass directly, but wildfire suppression, and post-fire seeding have the potential to decrease Wallowa needlegrass populations. Suppression efforts can include the use of lithosols for staging areas, safety zones, and firelines, all of which can remove Wallowa needlegrass through crushing, uprooting, smothering, and removal. Suppression effort may also spread non-native annual grasses. Post-fire seeding that is not targeted to specific areas of concern, such as the aerial seeding of non-native forage species after the Joseph/Starvation fire, may have had negative impacts on native grass species including Wallowa needlegrass.

Grazing is most likely to complicate restoration efforts, especially in dry open forest habitats, where palatable browse and grass is most accessible. Dewey (2013) noted that livestock grazing causes trampling of Wallowa needlegrass. Pasture condition should be assessed by the district range specialist and the district botanist after restoration treatments occur and prior to putting livestock out to graze. Premature use of treated pastures can lead to increased bare soil, erosion, decreases in native bunchgrasses and increases in invasive annual grasses.

Moist and wet meadows, riparian areas, springs and seeps may be more exposed after logging, thinning and/or prescribed fire, making them more vulnerable to use by both wild and domestic ungulates. Many of the springs in the project area have been converted to ponds, or diverted to troughs, locally drying soil and making water less available to vegetation. Lithosols are subject to off-road vehicle use, livestock use, as well as parking areas, and sites for piling and yarding.

With respect to cumulative effects for sensitive plants, Alternative 3 would have less impact because Alternative 3 would have no treatments in MA15, IRAs or PWAs, so less acres would receive silvicultural treatments. The main difference for sensitive plants is in the Wildhorse and Teepee Butte areas where populations of white fleabane will be affected in Alternative 2, but not Alternative 3. Less roads would be closed, leaving more access for passenger vehicles, but there would be no change in off road travel between current conditions or Alternative 2.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

The purpose and need for action is consistent with the 1990 Wallowa-Whitman National Forest Land and Resource Management Plan, as amended (Forest Plan). It is supported by differences between existing and desired ecosystem conditions, as determined from the Forest Plan, local policy recommendations for desired ranges of variation in vegetation conditions, local landscape assessments (e.g., Lower Joseph Creek Watershed Assessment (2013)), collaboration with the

Wallowa-Whitman Forest Collaborative and other publics, other agencies, consultation with Tribes, and field reviews. The purpose and need is also driven by goals of the National Cohesive Wildland Fire Management Strategy (2011), particularly goals to restore and maintain landscape resiliency to fire-related disturbances, and reduce risk of wildfire to human communities and infrastructure. The purpose and need is also consistent with the Endangered Species Act for the protection and restoration of Snake River steelhead as well as the Clean Water Act for protection of water quality and waterways in the project area.

The following management areas are found within LJCRP and have special guidance regarding : MA1 Timber, MA3 Big Game Habitat, MA 7 Wild and Scenic River (Joseph Creek), MA 9 HCNRA Dispersed Recreation, MA 10 HCNRA Forage, MA 11 HCNRA Dispersed Recreation and Timber, MA 12 Research Natural Areas (Horse Pasture Ridge, Haystack Rock), MA 15 Old Growth Forest, and Inventoried Roadless Areas. Management of TES plants follows Wallowa-Whitman LRMP and HCNRA CMP standards and guides, respectively.

The biological evaluation (BE) process is the qualitative analysis that was used to analyze potential effects to rare plants. The BE process is the method used to achieve Wallowa-Whitman National Forest Plan goals and objectives for protection of sensitive plants. The BE process was completed by a professional botanist for this project.

Potential impacts to sensitive plant populations and potential habitat were addressed through the interdisciplinary team, NEPA, and BE processes during project planning. All proposed project activities are therefore consistent with the above listed laws, Forest Service regulations, and applicable Wallowa-Whitman National Forest Plan standards, as they apply to botany.

Although there is a small chance of negative impacts to sensitive plant species from either action alternative selected (MIIH), the potential of negative impacts is relatively small. The areas treated are a relatively small percentage of the known populations and potential habitat for sensitive plants species throughout their range. Therefore, although the project may impact individuals and habitats for some sensitive plant species, implementation of either action alternative should not result in a contribution towards a trend toward federal listing of any sensitive plant species. The selection of either action alternative should not lead to a reduction in the long-term viability of any sensitive plant species on the Wallowa-Whitman National Forest.

Monitoring Recommendations

Project design criteria should provide sufficient protection to known sensitive plant populations and potential habitat in the project planning area. However, implementation monitoring is recommended for some sensitive plant populations for this project. This would include site visits to populations during and after project implementation. This would insure documentation that project design criteria were implemented. It would also allow an opportunity to confirm that the assumptions used for development of the project design criteria are correct. For example, a revisit to areas buffered a certain distance from activities would confirm is the distance is sufficient to prevent blow down, or unacceptable changes in hydrology or sunlight.

Appendices

Appendix : Known Strategic Plants, Biologically Unique Communities and Plant Associations (BUCs), and other special habitats.

Introduction

This report will focus on:

- Special Habitats including those documented in Hells Canyon National Recreation Area Comprehensive Management Plan (HCNRA CMP)
- Aspen, Pacific yew, biological soil crusts, rigid sage, and R6 strategic species suspected in the LJCRP area.
- Existing condition: identifying past and present (ongoing) actions or conditions that may reduce viability, habitat, populations or individuals with the project area.
- Cumulative Effects: identifying reasonably foreseeable actions, in addition to past, present and proposed actions that may reduce viability, habitat, populations or individuals with the project area

Special habitats in this report include biologically unique plant communities and plant associations defined in the HCNRA CMP. All scabland (lithosol)/rigid sagebrush plant communities are included, aspen, and the grand-fir-Pacific yew/queenscup beadlelily plant association. Seeps and springs, rock outcrops, and wet meadows are discussed in the TES plant report. Special habitats are uncommon on the landscape, and are typically not mapped in corporate vegetation layers. They are an important part of biodiversity on the landscape, providing habitats for plants and animals not found in the more abundant forest and range habitats.

There is an indirect connection in the stated purpose of the project, “to protect natural resources at risk to uncharacteristic wildfires”.

Appendices include:

Appendix 1: Plant communities of concern listed in HCNRA CMP

Appendix 2: Map of Biologically Unique and Rare Combinations of Outstanding and Diverse Ecosystems

Regulatory Framework

This report provides documentation of the biological evaluation process used for

1. To ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native plant, or contribute to a trend towards Federal listing of any species.

Land and Resource Management Plan

The Wallowa-Whitman National Forest Land and Resource Management Plan (LRMP) provides standards and guidelines for maintaining diversity, sensitive species.

Diversity

WWNF LRMP 4-30

Standards and Guidelines

- Project Analysis: Develop, during project planning, site-specific management prescriptions with goals for diversity and ecosystem function.
- Vegetation Manipulation: Provide and maintain an ecologically sound distribution and abundance of plant and animal communities and species at the forest stand, basin, and Forest level. This distribution should contribute to the goal of maintaining all native and desirable introduced species and communities
- Allow for all natural species to function following vegetation manipulation. None should be eliminated from the site.
- MA 3, 3A: Timber/Wildlife emphasis: Favor prescribed fire slash treatment methods when feasible prescribed fire from planned or unplanned ignitions will be used to achieve winter range management objectives, and maintain diversity within plant communities

Pertinent Standards and Guides from HCNRA CMP

Rare and Endemic Plant Species

Bio-S1: During project-level planning, to the extent feasible, survey and document the location of populations of rare and endemic plant species, rare combinations of outstanding and diverse ecosystems and parts associated therewith; and rare combinations of aquatic, terrestrial, and atmospheric habitats. Consider the effects of proposed projects on populations of rare and endemic plant species, rare combinations of outstanding and diverse ecosystems and parts associated therewith; and rare combinations of aquatic, terrestrial, and atmospheric habitats. Prescribe mitigation and protection for populations of rare and endemic plant species, rare combinations of outstanding and diverse ecosystems and parts associated therewith; and rare combinations of aquatic, terrestrial, and atmospheric habitats.

Refer to Appendix G – Detailed Vegetative Data for the criteria and a listing of rare and endemic plant species, rare combinations of outstanding and diverse ecosystems and parts associated therewith; and rare combinations of aquatic, terrestrial, and atmospheric habitats. (New)

Biologically Unique and Rare Combinations of Outstanding and Diverse Ecosystems

BUC-O1: Maintain biologically unique and rare combinations of outstanding and diverse ecosystems and parts associated therewith in an ecologically functioning sustainable condition. (New)

BUC-S1: Document and map biologically unique and rare combinations of outstanding and diverse ecosystems and parts associated therewith when they are encountered during site-specific activities such as range analysis, rare plant surveys, and vegetation examinations. (New)

BUC-G1: Consider selecting biologically unique and rare combinations of outstanding and diverse ecosystems and parts associated therewith as key utilization areas in range analysis where applicable and appropriate. (New)

BUC-O2: Outside Wilderness, maintain rare combinations of outstanding and diverse ecosystems and parts associated therewith or manage to attain the PNC within the HRV. (New)

Federal Law

Critical Habitat Unit

National Forest Management Act

State and Local Law

ORS 2013 564.105 Responsibility to protect and conserve native plants

Other Guidance or Recommendations

Viability USDA regulation 9500-004 2008

Species Diversity 1982 Planning Rule Section 291.27(g)

The Interior Columbia Basin Strategy

Methodology

- GIS mapping layers (vegetation, streams and wetlands, aerial imagery)
- Project GIS layers showing potential activity units
- Lower Joseph Range Analysis, WMO, 2005
- Lower Joseph Watershed Analysis, WMO 2010 and Wallowa Resources 2012
- Oregon Biodiversity Information Center

Biologically unique communities and plant associations were mapped during the course of the TES plant surveys.

Desired Condition

Forest Service objectives for maintaining native habitats and native plant diversity (FSM 2672.41):

- To ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native plant or contribute to animal species or trends toward Federal listing of any species.

The goals stated in the WWNF LRMP regarding TES species are:

Relevant HCNRA CMP goals are:

- Maintain or restore habitat to provide viable populations of rare and endemic plant species in the HCNRA.
- Maintain and restore biologically unique and rare combinations of outstanding and diverse ecosystems and parts associated therewith to ensure their continued functionality and sustainability.
- Maintain and restore biologically unique and rare combinations of aquatic, terrestrial, and atmospheric habitats.

Existing Condition

Strategic plant species, BUCs, and other special habitats have been assigned to habitat groups. For species found in more than one habitat group, other habitat groups are noted in the text associated with that species. Potential project impacts will be discussed in regards to the habitat type affected. Many strategic species are poorly known (i.e., distribution, habitat, threats, or taxonomy), so conservation status is unclear. Management direction for strategic species requires field units to record survey and location information in the agency's corporate Natural Resource Information System (NRIS) databases (NRIS TES Plants for vascular plants, non-vascular plants and fungi). Strategic Species are **not** considered "sensitive" under Forest Service Manual (FSM) 2670 and do not need to be addressed in Biological Evaluations. Strategic species are included as a way to further inform the habitat descriptions and analysis of effects to. HCNRA Rare Combinations of Outstanding and Diverse Ecosystems documented from LJCRP, and other plant communities of concern (Pacific yew and Aspen) are also included in the interest of maintaining biodiversity. Inventoried Roadless Areas (IRA) are included at the end of the habitat descriptions, as this is a management designation that spans most habitat types in the project area.

Coniferous Forest

Within the coniferous forest habitat type HCNRA Rare Combinations of Outstanding and Diverse Ecosystems ***Ponderosa Pine/Idaho Fescue and Ponderosa Pine/Bluebunch Wheatgrass*** plant associations are included because there are documented sites within LJCRP. Ponderosa pine totally dominates as the only tree species able to persist in the PIPO/FEID type. Shrubs are essentially absent, but common snowberry and rose do occur in limited amounts. Idaho fescue (FEID), bluebunch wheatgrass (AGSP), and prairie junegrass (KOCR), are the dominant understory species in the type. The most common forbs are lupine (LUPIN), and yarrow (ACMIL). The PIPO/AGSP community is very dry with trees occurring in a savannah over bluebunch wheatgrass-dominated steppe. Ponderosa pine totally dominates as the only tree species able to persist in the PIPO/AGSP type.

Shrubs are absent except for occasional dry-site opportunists (serviceberry, mountain-mahogany, squaw currant). Bluebunch wheatgrass and pine bluegrass (POSC) dominate the understory with cheatgrass usually associated in areas where ungulates have churned the soil beneath the old-growth trees. Idaho fescue is absent as it is unable to persist on these drier sites. Yarrow and lupines are the only common forbs regularly associated.

Both of these plant associations are uncommon in the HCNRA. Most of the ponderosa pine-dominated communities are successional to Douglas fir. Although ponderosa pine/bunchgrass communities with Idaho fescue and bluebunch wheatgrass potentials are found throughout the inland Pacific Northwest, sites which are too warm and too dry for fir establishment are limited in the HCNRA.

Grand Fir/Pacific yew/queen's cup beadlily plant association is not listed as an HCNRA Rare Combinations of Outstanding and Diverse Ecosystems, but it is only occasionally found in the Wallowa Snake Province (Johnson & Simon 1987), where LJCRP lies. Locally, this habitat is of concern due to past silvicultural practices where yew was considered to have no value and was removed with the goal of converting ABGR/TABR/CLUN sites to more commercially viable tree species. Yew occurs as a member of forested riparian habitats in grand fir and Engelmann spruce

dominated old growth and near seeps and springs as inclusions in ABGR/LIBO2 and ABGR/VAME communities. Pacific yew communities indicate a high water table (Johnson & Simon, 1987). Yew is sensitive to light and temperature change and will be threatened by increased exposure to dessicating heat resulting from tree canopy loss (Busing et al, 1995). The protection of Pacific yew sites should promote good water quality and more stable watersheds. Animal use of yew sites is high. Yew provides cover for large ungulates and the proximity to water provides for a high concentration of birds and small mammals. Yew sites are likely relict from past fires owing to their moist microenvironment. Yew is intolerant of any fire. Severe hedging from large ungulates can eliminate yew from seeps and springs. Mature yew is considered to be 250 to 350 years old (Johnson & Simon 1987).

R6 Strategic Plants Suspected in Coniferous Forest Habitat

Buxbaumia aphylla

Bug on a Stick Moss

Global Rank	State Rank	R6	WAW	LJCRP	Range
G4G5	S2	OR-STR	D	S	Widespread, circumboreal

Habitat Description

A pioneer on dry, mineral-poor soil and well-decayed wood, in exposed to shaded sites in forests, cutbanks of trails and roads, and recovering burns. In Oregon and Washington, elevation mostly 4000-6000 feet. Forest associations include *Pinus contorta*, *Pseudotsuga menziesii*, *Tsuga heterophylla*. No canopy to closed canopy, and forest age class does not seem to be important.

Rhizogogon subclavitisporus

truffle

Global Rank	State Rank	R6	WAW	LJCRP	Range
G2G3	S1	OR-STR	D	S	Regional endemic, Oregon east of Cascade crest to northern Idaho, apparently rare.

Habitat Description

In duff under mixed conifers, mycorrhizal

Rhizopogon bacillisporus

truffle

Global Rank	State Rank	R6	WAW	LJCRP	Range
G2G3	S1	OR-STR	S	S	Regional endemic, rare

Habitat Description

Mycorrhizal on conifers, coniferous forest

Potential threats to coniferous forest habitat are: changes in light regimes, changes in soil moisture and microsite humidity due to loss of canopy closure; grazing, prescribed burning in the spring; soil disturbance from logging activities, road construction and maintenance. For clustered lady's slipper, fires severe enough to burn through the duff layer and into the organic horizons may damage the shallow rhizome/root system. Opening canopy for understory species, through mechanical treatment or fire may provide habitat, but may also make plants more susceptible to grazing.

Grasslands

Within this habitat type HCNRA Rare Combinations of Outstanding and Diverse Ecosystems *Mountain Big Sagebrush/Idaho Fescue* plant association is included.

The mountain big sagebrush/Idaho fescue plant association is separated topographically into a steep slope type found at higher elevations in the Wallowa and Seven Devils Mountains and a gentle ridgetop type at moderate elevations across the dissected plateau tops of the HCNRA. In late seral stands Idaho fescue is the principal associate with mountain big sagebrush. With

degradation, fescue declines while the following plants increase: mountain brome (BRCA), Hood's sedge (CAHO), Wyeth's buckwheat (ARHE), yarrow (ACMIL), and groundsel (SEIN). Heavy site deterioration results in dramatic increases by tailcup lupine (LUCA) and Wyeth's buckwheat (ERHE).

Past sheep grazing and use has eliminated many of these subalpine-montane sagebrush communities. In highly disturbed communities, Wyeth's buckwheat, mountain brome, yarrow, and golden buckwheat (ERFL) often replace the Idaho fescue. However, Hood's sedge tends to remain intact on moist concavities and deeper soil areas with Idaho fescue.

This high elevation type occurs on shallow gravelly soils from 7,700 to 7,900 feet in elevation, and on southwesterly aspects. Slopes average 40 percent. Total herbaceous production from two sampled sites ranged from 200 to 600 lbs./acre (dry wt.). The occurrence of this shrub/bunchgrass community in the HCNRA is limited. Communities occur on the northern extremities of HCNRA where broad ridgetops consist of Columbia River basalts with loessal soils derived from the Columbia River basin. It is here that limited stands occur. Daubenmire (1970) recognized these stands as disjunct edaphic climax populations that are relict from a hypsithermal period when climates were more conducive for more widespread, contiguous stands in the area. Today's population is centered on Cold Springs Ridge in the Downey Saddle and Grasshopper Ridge vicinity north of the Frog Pond. A second area of occurrence in the HCNRA is in the Seven Devils Mountains. In the Blue and Wallowa Mountains outside the HCNRA this same plant association is commonly found. The unique character of these HCNRA communities occurs in their disjunct nature as outliers in the Seven Devils and on the southern edge of the Palouse Region.

R6 Strategic Plants suspected in Grassland Habitat

Carex duriuscula

NEEDLELEAF SEDGE

Global Rank	State Rank	R6	WAW	LJCRP	Range
G5	SH	OR-STR	S	S	Widespread

Habitat Description

Dry prairie, sagebrush steppe, open forest

Lithosols and Rigid Sagebrush Steppe

Within this habitat type HCNRA Rare Combinations of Outstanding and Diverse Ecosystems ***Douglas' Buckwheat-Sandberg's Bluegrass Plant Community Type*** is included. Shallow soil ridgetop communities dominated by Douglas' buckwheat (ERDO) with Sandberg's bluegrass (POSA3) define this plant community type. Perennial forbs usually associated with these communities are stonecrops (SEST, SELA2), biscuitroots (LOLE, LOCO2), big-head clover (TRMA), lovely penstemon (PEEL), sticky phlox (PHVI3), Holboell's rockcress (ARHO), hoary balsamroot BAIN), and Snake River daisy (ERDI4). As with many buckwheat communities, the ERDO/POSA3 type may be a product of past soil loss resulting from overgrazing and subsequent soil and wind erosion. With disturbance, erosion pavement and bare ground increase with a marked decline in moss cover. Forbs tending to increase are pussytoes, biscuitroots, bighead cover, lovely penstemon, and sticky phlox. Shallow soil ridge top scablands dominated by Douglas' buckwheat with Sandberg's bluegrass define this plant community type. The community is limited in extent and is located on Cold Springs Ridge. Although Daubenmire (1970) classified a Douglas' buckwheat-Sandbergs bluegrass habitat type in central Washington, its plant composition was significantly different. These communities in northern Wallowa

County are restricted to broad ridges trending toward the Grande Ronde canyon. It appears to be restricted to higher bunchgrass ridge tops where higher precipitation is available. Since it is restricted to a few ridge tops in the HCNRA, it warrants listing as an outstanding and diverse ecosystem.

R6 Strategic Species Suspected in Lithosol Habitat

Thelenella muscorum v. *octospora*

eight spored moss crust (lichen)

Global Rank	State Rank	R6	WAW	LJCRP	Range
G4G5	S2	OR-STR	S	S	Interruptedly circumboreal. Western United States, western Canada, Scandinavia, Europe, Russia

Habitat Description

A component of biological soil crusts in semi-arid shrub-steppe and grassland below elevations of 4,000 feet. Vegetation types are *Juniperus occidentalis*, *Artemisia rigida*, and *Artemisia tridentata* ssp. *wyomingensis* associations with *Festuca idahoensis*, *Poa secunda*, and *Pseudoroegneria spicata*. But also On soil, rock, and dead or dying mosses and lichens in dry woodland, prairie, shrub-steppe, and subalpine forest, up to 11,000 feet elevation

Moist Meadows, Springs and Seeps

Although the HCNRA Rare Combinations of Outstanding and Diverse Ecosystems *Quaking aspen* plant association is not documented from LJCRP within HCNRA, a number of sites were found in the southern portion of LJCRP. Aspen communities are communities of concern throughout the Blue Mountain ecoregion. Quaking aspen communities are rare in the HCNRA, as well as in the rest of the Blue Mountain ecoregion, and generally occur in relatively small, scattered clones. Their presence is usually associated with meadows or areas within conifer stands where subsurface moisture is present throughout most of the growing season. Grassland management, forested vegetation management, and fire can all influence the propagation and survival of aspen communities. Clones are generally limited to fringes around meadows or as islands in ridge top grasslands where subsurface moisture is available throughout most of the growing season. Cattle and big game generally favor these stands. Mature stands are generally in decadent condition because of old age, disease, overshadowing, crowding from encroaching conifers, and a general lack of vegetative reproduction due to browsing of root sprouts by ungulate wildlife species and domestic livestock. Aspen is an early-seral, pioneer species that is propagated by root suckering after disturbances like fire or removal of mature stems. Maturation of root sprouts to older age classes most often requires some protection from grazing ungulates. *Camas*, a culturally significant and was mapped during plant surveys. Common camas grows on sites that are moist to wet in spring but dry by late spring or summer. It is commonly found near vernal pools, springs, and intermittent streams. Common camas is shade intolerant. In forested areas, it is found on open sites created by disturbance. In grasslands and meadows, it is most prevalent in initial and early seral communities. Because growth and flowering occur in spring and early summer, short-interval fires in spring or early summer would probably reduce common camas populations (Howard, 1993).

R6 Strategic Plants Suspected in Springs and Seeps

Isoetes minima

MIDGET QUILLWORT

Global Rank	State Rank	R6	WAW	LJCRP	Range
G1G2	S1?	STR	D	S	Regional endemic? Documented from WA and BC

Habitat Description

Damp, bare places on prairies, on damp ground. Locally common in saturated soil

Other Special Habitats

R6 Strategic Plants Suspected in Rock Outcrops, Talus, Scree

Anomobryum filiforme

common silver moss

Global Rank	State Rank	R6	WAW	LJCRP	Range
G4G5	S1	OR-STR	D	S	Widespread in the temperate regions of the Northern and Southern Hemispheres.

Habitat Description

Damp outcrops in or near temperate forests, earth cliff crevices, cliff crevices, on tussock tundra with seeps and late snow melt areas, and on granitic outcrops

Effects

Spatial and Temporal Context for Effects Analysis

See TES Plant analysis.

Direct and Indirect Effects for Alternatives 2 and 3

Coniferous Forest

Ponderosa Pine/Idaho Fescue and Ponderosa Pine/Bluebunch Wheatgrass plant associations should be conserved within the project area through prescribed fire and thinning. Alternative 2 will have more benefit to these biologically unique communities because there are more acres of proposed treatment. Fire suppression is the main threat, but noxious weeds and invasive annual grasses are also a threat. Project design criteria such as minimizing prescribed fire and ground disturbance in areas with weeds as well as Range 5 and 7, using interdisciplinary input to assess areas for treatment and timing of prescribed fire with respect to noxious weeds, range resources, and sensitive plants are recommended.

Grand fir/Pacific yew/Queencup beadlelily this habitat should be conserved due to its contribution to biodiversity in the LJCRP area and its rarity within the Blue Mountain ecoregion. Johnson & Simon (1987) identified this plant association as being important to macrofauna such as deer and elk, as well as many species of birds. This plant association is at risk under both alternatives from both silvicultural treatments and prescribed fire. Pacific yew (*Taxus brevifolia*), is extremely sensitive to changes in microclimate and requires canopy closure to thrive, as well as long periods without disturbance (Busing 1995). Yew is found in the LJCRP in closed canopy mixed conifer stands in moist sites, and Johnson (1998) describes yew as an indicator of a high water table. Pacific yew is fire intolerant and slow to recover after wildfire (Busing 1995). Yew with a basal diameter (diameter at 6" above ground surface) of 9 inches and greater should be considered old trees (Crawford, 1983). The suggested mitigation is no treatments within yew stands, and BIOD-2 Leave tree islands in coniferous forest for conservation of native mycorrhizal fungi, yew, wet areas when these features are found or suspected in units.

Grasslands

HCNRA Rare Combinations of Outstanding and Diverse Ecosystems **Mountain Big Sagebrush/Idaho Fescue** plant association is considered with grassland habitats. This plant community is found on the extreme eastern edge of LJCRP. It is not documented within any

treatment units, but it is close to the 4680 (Cold Springs) road system. Very frequent fire suppresses mountain big sagebrush establishment, while long fire return intervals promote tree invasion into mountain big sagebrush communities. Fire return intervals of about 20 years are thought to be beneficial to mountain big sagebrush (Johnson, K. 2000). Suggested mitigation is to avoid activities associated with mechanical treatments in this community. Prescribed fire should be implemented, although grasslands are low priority for prescribed fire in both alternatives.

Lithosols/shallow soils

Within this habitat type HCNRA *Rare Combinations of Outstanding and Diverse Ecosystems Douglas' Buckwheat-Sandberg's Bluegrass Plant Community Type* is included. Recommended mitigations are the same as for TES plants in lithosols/shallow soils.

Moist Meadows, Wet Meadows, Riparian, Springs and Seeps:

Within this habitat type HCNRA *Rare Combinations of Outstanding and Diverse Ecosystems Quaking Aspen Plant Community Types* are included, although quaking aspen are not documented from the HCNRA portion of LJCRP, they are found within the project area and are considered as important for conservation within the Blue Mountain Ecoregion. Aspen can occur in meadows and meadow margins as well as in mixed conifer forest associated with shallow water tables. Aspen can benefit greatly from prescribed fire, if they are protected from ungulate use in seedling and sapling stages of growth. If Aspen are found in meadow or forest habitats, suggested mitigations are to treat areas by thinning conifers, or removing conifer encroachment from meadows and using prescribed fire. In addition, fencing may be required until aspen regeneration has developed enough to withstand ungulate use. *Camas* would also benefit from fire when plants are dormant. Project design criteria TESP-3 No road construction activities, or staging areas (such as landings, parking, piling) on non-forested habitats such as lithosols, grasslands, or meadows; and BIO –1 Avoid disturbing natural seeps and springs, wet meadows, moist meadows, this includes removing shrubs and trees will protect *Camas*, as well as wet meadows, seeps and springs.

Cumulative Effects

See TES plants BE, cumulative effects discussion is the same for special habitats and strategic species.

Appendix : TES Plant Occurrence and Effects Calls

Code	Scientific Name	Common Name	Global Rank	ORBI C State Rank	November 2014 SSS Category	WAW	Presence in Planning Area	Effects Calls Alternatives 2 & 3	Habitat Category
ACWA	<i>Achnatherum wallowaense</i>	Wallowa needlegrass	G2G3	S2S3	OR-SEN	D	Documented	MIH	Lithosol/shallow soil
ALGEG	<i>Allium geyeri</i> var. <i>geyeri</i>	Geyer's onion	G4G5	S1	OR-SEN	D	Suspected	NI	Moist meadows
ANMI8	<i>Anastrophyllum minutum</i>	Liverwort	G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
ANJU	<i>Anthelia julacea</i>	Liverwort	G3G4	S1	OR-SEN	D	No habitat	NI	Limestone
ASVI10	<i>Asplenium viride</i>	Green spleenwort	G4	S1	OR-SEN	D	No habitat	NI	Limestone
BALY	<i>Barbilophozia lycopodioides</i>	Liverwort	G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
BOHA3	<i>Boechera hastatula</i>	Hells canyon rockcress	G2	S2	OR-SEN	D	Suspected	NI	Talus, cliffs, rock outcrops
BOAS2	<i>Botrychium ascendens</i>	Upward-lobed moonwort	G3	S2	SEN	D	No habitat	NI	Cold riparian forest
BOCA5	<i>Botrychium campestre</i>	Prairie moonwort	G3G4	S1	OR-SEN	D	No habitat	NI	Cold riparian forest
BOCR	<i>Botrychium crenulatum</i>	Crenulate moonwort	G3	S2	SEN	D	Suspected	NI	Moist meadows
BOHE5	<i>Botrychium hesperium</i>	Western moonwort	G4	S1	SEN	D	Suspected	NI	Moist meadows
BOLI7	<i>Botrychium lineare</i>	Slender moonwort	G2G3	S1	SEN	D	No habitat	NI	Cold Forest
BOLU	<i>Botrychium lunaria</i>	Moonwort	G5	S2	OR-SEN	D	Suspected	NI	Moist meadows
BOMO	<i>Botrychium montanum</i>	Mountain grape-fern	G3	S2	OR-SEN	D	No habitat	NI	Cold riparian forest
BOPA9	<i>Botrychium paradoxum</i>	Twin-spiked moonwort	G3G4	S1	SEN	D	No habitat	NI	Cold riparian forest
BOPE4	<i>Botrychium pedunculosum</i>	Stalked moonwort	G2G3	S1	SEN	D	Suspected	NI	Moist meadows
BUAM2	<i>Bupleurum americanum</i>	Bupleurum	G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine

Code	Scientific Name	Common Name	Global Rank	ORBI C State Rank	November 2014 SSS Category	WAW	Presence in Planning Area	Effects Calls Alternatives 2 & 3	Habitat Category
CAMAM	<i>Calochortus macrocarpus</i> var. <i>maculosus</i>	green-band mariposa-lily	G5	S2	SEN	D	Documented	MIIH	Grasslands
CANI	<i>Calochortus nitidus</i>	Broad-fruit mariposa-lily	G3	S1	OR-STR/WA-SEN	S	No habitat	NI	Grasslands*
CAAT8	<i>Carex atosquama</i>	Blackened sedge	G5	S1	OR-SEN/WA-STR	D	No habitat	NI	Subalpine/ alpine
CACA12	<i>Carex capillaris</i>	Hairlike sedge	G5	S2	SEN	D	No habitat	NI	Cold riparian forest
CACA13	<i>Carex capitata</i>	Capitate sedge	G5	S2	OR-SEN/WA-STR	S	No habitat	NI	Cold riparian forest
CACO81	<i>Carex cordillerana</i>	Cordilleran sedge	G3G4	S2	OR-SEN	D	Suspected	MIIH	Coniferous Forest
CADI4	<i>Carex diandra</i>	Lesser panicled sedge	G5	S1	OR-SEN	S	No habitat	NI	Fens
CAGY2	<i>Carex gynocrates</i>	Yellow bog sedge	G5	S1	SEN	D	No habitat	NI	Subalpine/ alpine
CAID	<i>Carex idahoa</i>	Idaho sedge	G2G3	S1	OR-SEN	S	No habitat	NI	Moist meadows*
CALAA	<i>Carex lasiocarpa</i> var. <i>americana</i>	Slender sedge	G5	S2	OR-SEN	D	No habitat	NI	Fens
CAME9	<i>Carex media</i>	Intermediate sedge	G5?	S1	SEN	D	No habitat	NI	Cold riparian forest
CAMI16	<i>Carex micropoda</i>	Pyrenaean sedge	G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
CANA2	<i>Carex nardina</i>	Spikenard sedge	G4G5	S2?	OR-SEN	D	No habitat	NI	Subalpine/ alpine
CAPE5	<i>Carex pelocarpa</i>	New sedge	G4G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
CARE4	<i>Carex retrorsa</i>	Retorse sedge	G5	S1	OR-SEN	D	No habitat	NI	Wet meadows and riparian*
CASA10	<i>Carex saxatilis</i>	Russet sedge	G5	S1	OR-SEN	D	No habitat	NI	Fens

Code	Scientific Name	Common Name	Global Rank	ORBI C State Rank	November 2014 SSS Category	WAW	Presence in Planning Area	Effects Calls Alternatives 2 & 3	Habitat Category
CASU7	<i>Carex subnigricans</i>	Dark alpine sedge	G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
CAVE5	<i>Carex vernacula</i>	Native sedge	G5	S2	OR-SEN	D	No habitat	NI	Subalpine/ alpine
CAFLR	<i>Castilleja flava var. rustica</i>	Rural paintbrush	G4G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
CAFR8	<i>Castilleja fraterna</i>	Fraternal paintbrush	G2	S2	OR-SEN	D	No habitat	NI	Subalpine/ alpine
CARU8	<i>Castilleja rubida</i>	Purple alpine paintbrush	G2	S2	OR-SEN	D	No habitat	NI	Subalpine/ alpine
CHFE	<i>Cheilanthes feei</i>	Fee's lip-fern	G5	S2	SEN	D	No habitat	NI	Limestone
COTE13	<i>Comastoma tenellum</i>	Slender gentian	G4G5	S1	SEN	S	No habitat	NI	Fens
CRST2	<i>Cryptogramma stelleri</i>	Steller's rockbrake	G5	S1	SEN	D	No habitat	NI	Limestone
CYLUL	<i>Cyperus lupulinus ssp. lupulinus</i>	A cyperus	G5	S1	OR-SEN	D	No habitat	NI	Low elevation riparian
CYFA	<i>Cypripedium fasciculatum</i>	Clustered lady's-slipper	G4	S2	OR-SEN	D	Suspected	MIIH	Coniferous Forest
ELBR5	<i>Elatine brachysperma</i>	Short seeded waterwort	G5	S1	OR-SEN	S	No habitat	NI	Low elevation riparian
ELBO	<i>Eleocharis bolanderi</i>	Bolander's spikerush	G4	S2	OR-SEN	D	Documented	NI	Seeps, springs
ENBR2	<i>Encalypta brevipes</i>	Moss	G3	S1	OR-SEN	S	Suspected	NI	Talus, cliffs, rock outcrops
ENFA2	<i>Entosthodon fascicularis</i>	Moss	G4G5	S1	OR-SEN/WA-STR	S	Suspected	NI	Seeps, springs
ERDA3	<i>Erigeron davisii</i>	Engelmann's daisy	G3	S1	OR-SEN/WA-STR	D	Documented	MIIH	Lithosol/shallow soil
ERDI3	<i>Erigeron disparipilus</i>	White cushion erigeron	G5	S2	OR-SEN	D	Documented	MIIH	Lithosol/shallow soil

Code	Scientific Name	Common Name	Global Rank	ORBI C State Rank	November 2014 SSS Category	WAW	Presence in Planning Area	Effects Calls Alternatives 2 & 3	Habitat Category
EUME17	<i>Eurybia merita</i>	Arctic aster	G5	SNR	OR-STR/WA-SEN	D	No habitat	NI	Subalpine/ alpine
GEPR3	<i>Gentiana prostrata</i>	Moss gentian	G4G5	S2	OR-SEN	S	No habitat	NI	Fens
GEROT	<i>Geum rossii</i> var. <i>turbinatum</i>	Slender-stemmed avens	G5	S2	OR-SEN	D	No habitat	NI	Subalpine/ alpine
HAFL9	<i>Harpanthus flotovianus</i>	Liverwort	G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
HECU3	<i>Heliotropium curassavicum</i>	Salt heliotrope	G5	S2	OR-SEN	S	No habitat	NI	Low elevation riparian
JUTRA2	<i>Juncus triglumis</i> var. <i>albescens</i>	Three-flowered rush	G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
JUPO3	<i>Jungermannia polaris</i>	Liverwort	G4	S1	OR-SEN	D	No habitat	NI	Limestone
KOMY	<i>Kobresia myosuroides</i>	Bellard's kobresia	G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
KOSI2	<i>Kobresia simpliciuscula</i>	Simple kobresia	G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
LIAR6	<i>Lipocarpha aristulata</i>	Aristulate lipocarpha	G5?	S1	SEN	D	No habitat	NI	Low elevation riparian
LIBO4	<i>Listera borealis</i>	Northern twayblade	G4	S1	OR-SEN	D	Suspected	MIH	Coniferous Forest
LOER2	<i>Lomatium erythrocarpum</i>	Red-fruited lomatium	G1G2	S1S2	OR-SEN	D	No habitat	NI	Subalpine/ alpine
LOGR2	<i>Lomatium greenmanii</i>	Greenman's desert parsley	G1	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
LOGI3	<i>Lophozia gillmanii</i>	Liverwort	G5	S1	OR-SEN	D	No habitat	NI	Limestone
LYCO3	<i>Lycopodium complanatum</i>	Ground cedar	G5	S2	OR-SEN	D	No habitat	NI	Coniferous Forest*
MIHY	<i>Mimulus hymenophyllus</i>	Membrane-leaved monkeyflower	G2	S1S2	OR-SEN	D	Suspected	NI	Talus, cliffs, rock outcrops

Code	Scientific Name	Common Name	Global Rank	ORBI C State Rank	November 2014 SSS Category	WAW	Presence in Planning Area	Effects Calls Alternatives 2 & 3	Habitat Category
MIMA2	<i>Mirabilis macfarlanei</i> ^{FT}	Macfarlane's four o'clock	G2	S1	FT	D	No Habitat	No Effect	Grasslands*
MUMI2	<i>Muhlenbergia minutissima</i>	Annual dropseed	G5	S2	OR-SEN	S	Suspected	NI	Moist meadows
OPPU3	<i>Ophioglossum pusillum</i>	Adder's-tongue	G5	S1	SEN	D	No habitat	NI	Wet meadows and riparian*
PAP012	<i>Packera porteri</i>	Porter's butterweed	G4	SH	OR-STR/WA-SEN	S	No habitat	NI	Subalpine/ alpine
PEBR5	<i>Pellaea bridgesii</i>	Bridges' cliff-brake	G4	S2	OR-SEN	D	No habitat	NI	Cold Forest
PEQU7	<i>Peltolepis quadrata</i>	Liverwort	G4	S1	OR-SEN	D	No habitat	NI	Limestone
PHMI7	<i>Phacelia minutissima</i>	Dwarf phacelia	G3	S1	SEN	D	Suspected	NI	Moist meadow
PHMU3	<i>Phlox multiflora</i>	Many-flowered phlox	G4	S1	OR-SEN	D	Suspected	NI	Talus, cliffs, rock outcrops
PIAL	<i>Pinus albicaulis</i> ^{FC}	Whitebark pine	G3G4	S3	SEN	D	No habitat	NI	Subalpine/ alpine
PIFL2	<i>Pinus flexilis</i>	Limber pine	G4	S2?	OR-SEN	D	No habitat	NI	Subalpine/ alpine
PLOB	<i>Platanthera obtusata</i>	Small northern bog-orchid	G5	S1	SEN	D	No habitat	NI	Fens
PLOR3	<i>Pleuropogon oregonus</i>	Oregon semaphoregrass	G1	S1	OR-SEN	S	Suspected	NI	Wet meadows and riparian
PODI	<i>Potamogeton diversifolius</i>	Rafinesque's pondweed	G5	S1	OR-SEN	S	No habitat	NI	Wet meadows and riparian*
PRQU2	<i>Preissia quadrata</i>	Liverwort	G5	S2	OR-SEN	D	No habitat	NI	Limestone
PSTR5	<i>Pseudocalliergon trifarium</i>	Moss	G4	S1	OR-SEN	S	No habitat	NI	Fens
PTPU2	<i>Ptilidium pulcherrimum</i>	Liverwort	G5	S1	OR-SEN	D	Suspected	MIH	Coniferous Forest
PYSC4	<i>Pyrrocoma scaberula</i>	Rough pyrrocoma	G2	S1	OR-SEN	D	Documented	MIH	Grasslands

Code	Scientific Name	Common Name	Global Rank	ORBI C State Rank	November 2014 SSS Category	WAW	Presence in Planning Area	Effects Calls Alternatives 2 & 3	Habitat Category
ROCO3	<i>Rorippa columbiae</i>	Columbia cress	G3	S3	SEN	S	Suspected	NI	Wet meadows and riparian
RORA	<i>Rotala ramosior</i>	Lowland toothcup	G5	S2	SEN	S	Suspected	NI	Wet meadows and riparian
RUBA	<i>Rubus bartonianus</i>	Bartonberry	G2	S2	OR-SEN	D	No habitat	NI	Low elevation riparian
SAFA	<i>Salix farriae</i>	Farr's willow	G4	S2	OR-SEN	D	No habitat	NI	Cold riparian forest
SAWO	<i>Salix wolfii</i>	Wolf's willow	G5?	S2	OR-SEN	D	No habitat	NI	Cold riparian forest
SAADO2	<i>Saxifraga adscendens ssp. oregonensis</i>	Wedge-leaf saxifrage	G5	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
SCCI5	<i>Schistidium cinclidodonteum</i>	Moss	G2G3	S2	OR-SEN	D	Suspected	MIIH	Coniferous Forest
SISP2	<i>Silene spaldingii</i> ^{FT}	Spalding's catchfly	G2	S2	FT	D	Suspected	May Effect – NLAA	Grasslands
SUVI	<i>Suksdorfia violacea</i>	Violet suksdorfia	G4	S1	OR-SEN	S	Suspected	NI	Talus, cliffs, rock outcrops
TEGE	<i>Tetraphis geniculata</i>	Moss	G3G5	S1	OR-SEN/WA-STR	S	Suspected	MIIH	Coniferous Forest
THAL	<i>Thalictrum alpinum</i>	Alpine meadowrue	G5	S2	OR-SEN	D	No habitat	NI	Subalpine/ alpine
THEU	<i>Thelypodium eucosmum</i>	Arrow-leaf thelypody	G2	S2	OR-SEN	S	No habitat	NI	Low elevation riparian
TOMU70	<i>Tortula mucronifolia</i>	Moss	G5	S2	OR-SEN	S	Suspected	NI	Talus, cliffs, rock outcrops
TOMO	<i>Townsendia montana</i>	Mountain townsendia	G4	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
TOPA2	<i>Townsendia parryi</i>	Parry's townsendia	G4?	S1	OR-SEN	D	No habitat	NI	Subalpine/ alpine
TRDO	<i>Trifolium douglasii</i>	Douglas' clover	G2	S1	SEN	D	Suspected	NI	Moist meadows
TRLAA2	<i>Trollius latus ssp. albiflorus</i>	American globeflower	G5	S1	OR-SEN	D	Suspected	NI	Wet meadows, riparian

Code	Scientific Name	Common Name	Global Rank	ORBI C State Rank	November 2014 SSS Category	WAW	Presence in Planning Area	Effects Calls Alternatives 2 & 3	Habitat Category
UTMI	<i>Utricularia minor</i>	Lesser bladderwort	G5	S2	OR-SEN	D	Documented	NI	Fens

* based on expert opinion, species is not expected in LJCRP.

FC = federal candidate

FT = federal threatened

¹Project Planning Area Occurrence

Documented	D	Species is documented in the project planning area
Suspected	S	Potential habitat present, and species is suspected to occur in project planning area

²Effects Calls

NI	No impact, the species does not occur in project area, and/or activities will not impact populations
MIIH	May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species
WIFV	Will impact individuals or habitat with a consequence that the action may contribute to a trend towards federal listing or cause a loss of Viability to the Population or Species
BI	Beneficial Impact

Appendix : Sensitive Plants documented or suspected to occur in the LJCRP by habitat type.

Forest

<i>Carex cordillerana</i>				Cordilleran sedge	
Global Rank	State Rank	R6	WAW	LJCR	Range
G3G4	S2	OR-SEN	D	S	Regional endemic (inland PNW, northern Rockies)
Habitat Description					
Naturally disturbed rocky slopes with organic layer and leaf litter in mesic mixed forests, or disturbed open grassy slopes. Moist, shady woods; warm-moist plant associations.					
<i>Cypripedium fasciculatum</i>				CLUSTERED LADY'S-SLIPPER	
Global Rank	State Rank	R6	WAW	LJCR	Range
G4	S2	OR-SEN	D	S	Widespread, western US
Habitat Description					
Mixed conifer stands, mesic forests, around springs. Forest, grand fir to Ponderosa pine, and warm riparian forests.					
<i>Listera borealis</i>				Northern twayblade	
Global Rank	State Rank	R6	WAW	LJCR	Range
G4	S1	OR-SEN	D	S	Southwestern-most edge of range
Habitat Description					
Moist, humus or mossy mixed conifer or (cool-moist) hardwood forests, swamps, often along cold streams					
<i>Ptilidium pulcherrimum</i>				naugehyde liverwort	
Global Rank	State Rank	R6	WAW	LJCR	Range
G5	S1	OR-SEN	D	S	Widespread, circumboreal
Habitat Description					
On trunks and branches of living trees and shrubs; or more rarely on decaying wood, among boulders in talus slopes, ledges of cliffs, and very rarely on soil, but generally in cool moist habitats between 3800 and 8000 feet on the W-W NF so would include <i>Pseudotsuga menziesii</i> , <i>Abies grandis</i> , <i>Abies lasiocarpa</i> , and <i>Picea engelmannii</i> associations					
<i>Schistidium cinclidodonteum</i>				Schistidium moss	
Global Rank	State Rank	R6	WAW	LJCR	Range
G2G3	S2	OR-SEN	S	S	Washington, Idaho, Oregon, California, Nevada, and Europe.
Habitat Description					

Forming sods on wet or dry rocks or on soil in crevices of rocks and boulders, often along intermittent streams, at elevations of 5000-11,000 feet. Habitats probably include <i>Pinus ponderosa</i> , <i>Abies grandis</i> , and <i>Abies lasiocarpa</i> , associations.					
<i>Tetraphis geniculata</i>				bent stem moss	
Global Rank	State Rank	R6	WAW	LJCR	Range
G3G5	S1	OR-SEN	S	S	Widespread, Russian Far East, Japan, Western and Eastern North America
Habitat Description					
On the cut ends and sides of well decayed logs and stumps, occasionally on peaty banks; moist conif. forests. Rarely on rocks. In mature to late seral forests with closed canopies. Found from sea level to subalpine elevations.					

Grassland

<i>Calochortus macrocarpus</i> v. <i>maculosus</i>				GREEN-BAND MARIPOSA LILY	
Global Rank	State Rank	R6	WAW	LJCRP	Range
G5	S2	SEN	D	D	Regional endemic
Habitat Description					
Dry plains, rocky slopes, sagebrush scrub, pine forests, usually in volcanic soil; 300-2700 m (18). Dry grasslands, ridge tops. In rocky, basaltic derived soils, on hillsides, rock outcrops and cliff bands. In grasslands on steep slopes.					
<i>Pyrrocoma scaberula</i>				ROUGH RABBITWEED	
Global Rank	State Rank	R6	WAW	LJCRP	Range
G3	S2	OR-SEN	D	D	Regional endemic
Habitat Description					
Mesic canyon grasslands (ID fescue) with deep soil and transition zones between grasslands & P-pine communities					
<i>Delphinium bicolor</i>				FLATHEAD LARKSPUR	
Global Rank	State Rank	R6	WAW	LJCRP	Range
G4G5	S1	OR-SEN	D	S	Regional endemic
Habitat Description					
Dry meadow edges, sage scrub, open woodlands and edges. Seepy areas in dry forest.					
<i>Silene spaldingii</i>				SPALDING'S CATCHFLY	
Global Rank	State Rank	R6	WAW	LJCRP	Range
G2	S1	FT	D	S	Regional endemic, PNW
Habitat Description					

Deep-soiled grasslands, often w/Idaho fescue, sometimes on fringes of Ponderosa Pine forest. Soils are loess over basalt and sometimes gravelly.

Lithosols and other shallow soils

<i>Achnatherum wallowaense</i>				WALLOWA NEEDLEGRASS		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G2G3	S2S3	OR-SEN	D	D		Narrow endemic, Wallowa and Crook Counties
Habitat Description						
Often with rigid sagebrush in dry grasslands & scablands (lithosolic substrates) at mid elevations						
<i>Erigeron disparipilus</i>				SNAKE RIVER DAISY		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G5	S2	OR-SEN	D	D		Local Endemic: mostly SW Idaho, some SW WA and NE OR
Habitat Description						
In dry grasslands and shallow soiled plateaus and ridges / ridge shoulders and rocky slopes at mid elevations						
<i>Erigeron englemannii v. davisii</i>				DAVIS FLEABANE		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G3G4	S2	OR-SEN	S	S		Local endemic: Idaho near the Snake River and NE Oregon
Habitat Description						
In dry grasslands and shallow soiled plateaus and ridges / ridge shoulders and rocky slopes at mid elevations						

Talus, cliffs and rock outcrops

<i>Boechera hastatula</i>				HELLS CANYON ROCKCRESS		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G2	S2	OR-SEN	D	S		Regional endemic, Oregon Cascades and Wallowa Mountains
Habitat Description						
basalt outcrops/cliffs; moderate to high elevations, within cold forest						
<i>Encalypta brevipes</i>				CANDLE-SNUFFER MOSS		
Global Rank	State Rank	R6	WAW	LJCRP		Range

G3	S1	OR-SEN	S	S		Interruptedly circumboreal. In the PNW, Alberta, British Columbia, Washington, and Oregon.
Habitat Description						
Soil on ledges and in crevices on cliffs, reported from both igneous and siliceous substrates - various elevations						
<i>Mimulus hymenophyllus</i>			MEMBRANE LEAVED MONKEYFLOWER			
Global Rank	State Rank	R6	WAW	LJCRP		Range
G1	S1	OR-SEN	D	S		Local endemic, Wallowa County, Idaho Co. Idaho and SW Montana
Habitat Description						
on steep moist soil and seeps and seeping cracks in basalt and limestone in low elevation canyons						
<i>Phlox multiflora</i>			MANY-FLOWERED PHLOX			
Global Rank	State Rank	R6	WAW	LJCRP		Range
G4	S1	OR-SEN	D	S		Disjunct, in our area, most of the population is in MT, WY, ID
Habitat Description						
Basalt cliffs, rocky outcrops, rocky openings in dry forest. Wooded rocky areas, as well as in openings in the forest. Loose substrate rather than exposed hard rocks. Residual soils, gravels, cobbles.						
<i>Suksdorfia violacea</i>			VIOLET MOCK BROOKFOAM			
Global Rank	State Rank	R6	WAW	LJCRP		Range
G4	S1	OR-SEN	S	S		Disjunct, British Columbia south along the east side of the Cascades to the Columbia River Gorge, and east to northeastern Washington, northern Idaho, and northwestern Montana.
Habitat Description						
In moss on wet cliffs, cracks of moist talus slopes, on basalt. Habitat sometimes is only wet in the spring.						
<i>Tortula mucronifera</i>			SHARP-TIPPED TWISTED MOSS			
Global Rank	State Rank	R6	WAW	LJCRP		Range
G5	S2	OR-SEN	S	S		Widespread, throughout the Northern Hemisphere
Habitat Description						

On soil, tree roots, and sheltered ledges and crevices of rock outcrops and cliffs. Elevation of known sites ranges from 5000-7000 feet. Known vegetation types are rock outcrops in *Abies* forest in SW Oregon, and riparian forest on Steens Mountain composed of *Betula occidentalis*, *Populus tremuloides*, and *Populus trichocarpa*. Reportedly a calciphile but in Oregon and Washington on acid rocks as well.

Seeps and springs

<i>Eleocharis bolanderi</i>				BOLANDER'S SPIKERUSH		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G4	S2	OR-SEN	S	S		Widespread, western USA
Habitat Description						
Mid elevation summer-dry meadows, springs, seeps, ephemeral stream margins						
<i>Entosthodon fascicularis</i>				BANDED CORD MOSS		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G4G5	S1	OR-SEN	S	S		Widespread, BC, AZ, CA., ID, OR, WA, Europe
Habitat Description						
On seasonally wet, exposed soil in seeps or along intermittent streams. It is usually hidden among grasses, other mosses, and litter, and periodically on humid or damp earth of terraces of exposed rock outcrops &; may be found on recently disturbed soil & occasionally present on thin soil overlying limestone; found below 3,000 feet.						

Moist Meadows

<i>Allium geyeri</i> v. <i>geyeri</i>				GEYER'S ONION		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G4G5	S1	OR-SEN	D	S		widespread, western US
Habitat Description						
Moist, open slopes, meadows, or stream banks or summer-dry grasslands at low to mid elevation						
<i>Botrychium crenulatum</i>				CRENULATE MOONWORT		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G3	S2	SEN	D	S		Widespread, western US
Habitat Description						
Moist woodlands, meadows, & grassy roadsides.						
<i>Botrychium hesperium</i>				WESTERN MOONWORT		

Global Rank	State Rank	R6	WAW	LJCRP	Range
G4	S1	SEN	D	S	Widespread, western US, Canada, Great Lakes
Habitat Description					
Mid to high elevation open-canopied forests, also in gravelly soils, or open meadows.					
<i>Botrychium lunaria</i>			COMMON MOONWORT		
Global Rank	State Rank	R6	WAW	LJCRP	Range
G5	S2	OR-SEN	D	S	Widespread, North America, northern Europe, NE Russia
Habitat Description					
Open (to lightly wooded) meadows as well as scree slopes, mesic woodlands on moist but well-drained soils with a neutral pH					
<i>Botrychium pedunculosum</i>			STALKED MOONWORT		
Global Rank	State Rank	R6	WAW	LJCRP	Range
G2G3	S1	SEN	D	S	Widespread, Rocky Mountains, with disjunct populations in Quebec and the Alaskan peninsula
Habitat Description					
mountain meadows, roadside meadows, brushy secondary woodlands, and open to closed canopy forests.					
<i>Muhlenbergia minutissima</i> (Annual)			ANNUAL DROPSEED		
Global Rank	State Rank	R6	WAW	LJCRP	Range
G5	S2	OR-SEN	S	S	Widespread, western USA
Habitat Description					
Sandy riverbanks, moist meadows, or open and rocky and apparently dry slopes (9). Open, more or less disturbed, sandy slopes and seeps, 400-2300 m (111).					
<i>Phacelia minutissima</i> (Annual)			DWARF PHACELIA		
Global Rank	State Rank	R6	WAW	LJCRP	Range
G3	S1	SEN	D	S	Edge of range, most reports are from Idaho, with outliers in Washington, Oregon, and Nevada.
Habitat Description					
Moist meadow and seep edges, or on vernal wet open meadows and barren slopes. Reported to occur with aspen in other areas. Gravelly, clay-loam, well-drained soils.					
<i>Trifolium douglasii</i>			DOUGLAS' CLOVER		
Global Rank	State Rank	R6	WAW	LJCRP	Range

G2	S1	SEN	D	S		Regional endemic, Oregon, Washington, Idaho
Habitat Description						
Moist or mesic meadows, prairie remnants, along riparian areas along streams. In swales, along intermittent streams, and in vernal wet areas. Alluvial soils, ash/clay, fine silt to sandy.						

Wet Meadows and Riparian

<i>Botrychium montanum</i>				MOUNTAIN GRAPE-FERN		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G3	S2	OR-SEN	D	S		From northern CA north through OR and WA to BC and SE Alaska. East it extends through northern ID and NW Montana.
Habitat Description						
Dark, coniferous forests, usually near swamps and streams; 1000-2000 m (18). Wet meadows, saturated soils. Often growing in a bed of mosses. This species tends to grow in wetter sites than the other Botrychiums.						
<i>Pleuropogon oregonus</i>				OREGON SEMAPHOREGRASS		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G1	S1	OR-SEN	S	S		Regional endemic, documented from Union Co and Lake Co, OR.
Habitat Description						
Elev. 900-1600 m (22). Open, wet meadows, marshes, and riparian areas. Grows in areas of standing or flowing water early in season. Documented sites are not near forested habitats. Sluggish water in depressions and sloughs. Irrigation ditches in S. OR.						
<i>Rorippa columbiae</i>				COLUMBIA CRESS		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G3	S3	SEN	S	S		Regional endemic, mostly OR but into WA and N CA.
Habitat Description						
Stream banks, ditches, margins of lakes and ponds, meadows, roadsides, gravel bars, wet fields. Low to moderate elevations.						
<i>Rotala ramosior</i>				LOWLAND TOOTH CUP		
Global Rank	State Rank	R6	WAW	LJCRP		Range
G5	S2	SEN	S	S		Widespread, N America, S America, Taiwan
Habitat Description						

Damp, bare places on prairies, on damp ground. Locally common in saturated soil					
<i>Trollius laxus ssp. albiflorus</i>				AMERICAN GLOBEFLOWER	
Global Rank	State Rank	R6	WAW	LJCRP	Range
G4	S1	OR- SEN	D	S	Edge of Range
Habitat Description					
Montane to alpine moist sunny wet meadows, (+/- acidic) seeps, bogs, and riparian openings in mixed conifer stands with a gentle flow of water running through it, vernal wet swales in spruce/fir forest, often accompanied by alders.					

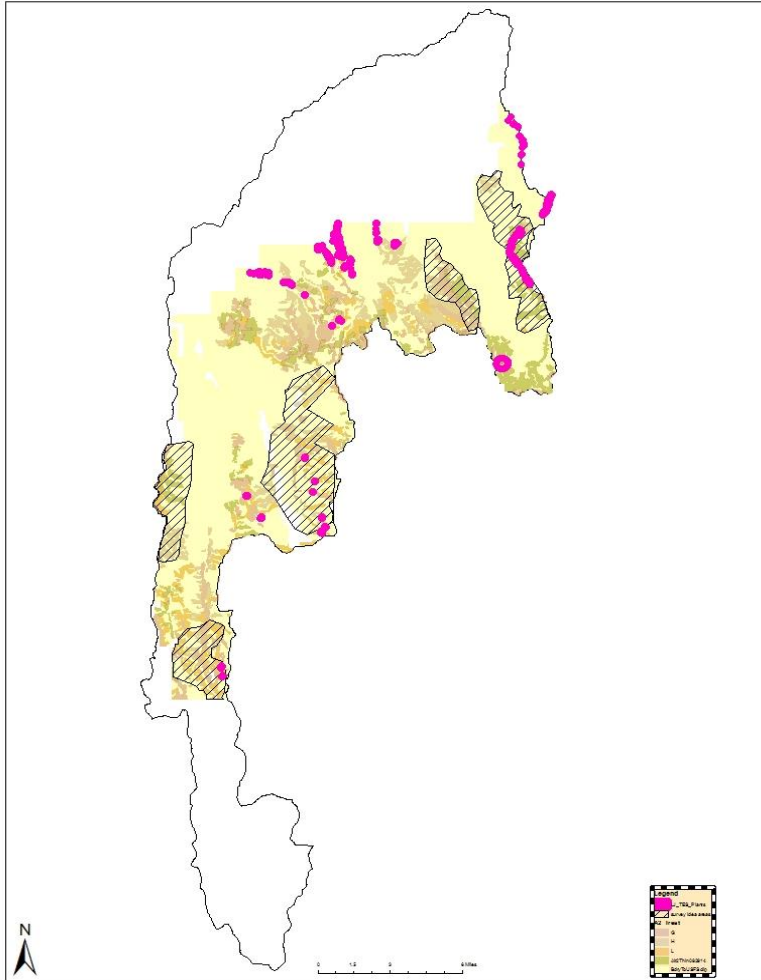
1/ D = documented to occur in the project area; S = suspected to occur in the project area

2,3/ 1 = Critically imperiled because of extreme rarity or because it is somehow especially vulnerable to extinction or extirpation. 2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (extirpation). 3 = Rare, uncommon or threatened, but not immediately imperiled. 4 = Not rare and apparently secure, but with cause for long-term concern. 5 = Demonstrably widespread, abundant, and secure. H = Historical Occurrence, formerly part of the native biota with the implied expectation that it may be rediscovered.

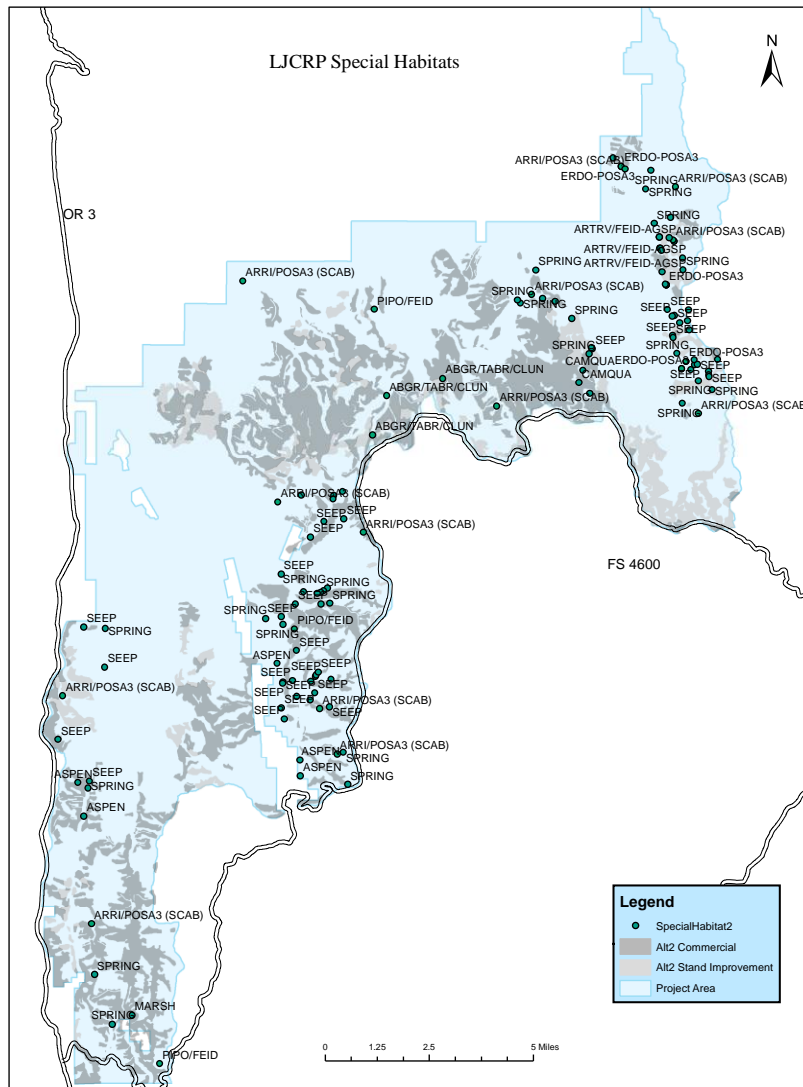
4/ Federally listed threatened

Appendix: Maps.

Areas surveyed for TES plants in 2015 are in black hatching. Pink dots represent TES plant locations. Yellow is the project area. Browns and greens are restoration units.



Locations of HCNRA Unique and Rare Combinations of Outstanding and Diverse Ecosystems and other special habitats in LJCRP



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Appendix: Lower Joseph Creek Restoration Project Botany Implementation Guide

INTRODUCTION

Lower Joseph Creek Restoration Project (LJCRP) was large in scope and therefore required several assumptions in the analysis and design criteria. The purpose of this document is to ensure that all assumptions and design criteria included in analysis are met during implementation and that work conducted and decisions made during implementation are adequately documented.

As a measure to reduce duplication of design criteria application, and therefore the workload for Sale Preparation, botanists will be the only implementation guide that addresses meadows. Please be sure to consult with Hydrology, Fire/Fuels, Range, Weeds, Wildlife, and Engineering to ensure that all of the required design criteria are included in the Unit Summary.

The flowchart, implementation worksheet, and monitoring worksheet are meant as reminders of assumptions and requirements included during NEPA analysis. This guide does not encompass all possible scenarios that may be encountered during implementation, but is designed to stimulate thoughts and encourage documentation of the implementation process. The worksheets are meant as guides, and **therefore can (and should) be adapted to suit the changing needs**.

Completed worksheets should be stored in the appropriate files at the District, but electronic copies should also be filed in the appropriate district folder on the O Drive at:

O:\NFS\XXX\xxx\xxx

Having all of the documentation in one place will make responding to FOIA requests easier and more efficient, as well as encouraging sharing across District boundaries.

ASSUMPTIONS

The following assumptions were made in the botany analysis for LJCRP:

- Catastrophic wildfires are a threat to all landscape resource values as fire suppression has moved Ponderosa pine, and moist forest habitat, outside the range of variability.

- Silvicultural treatments will make treated stands more resilient to uncharacteristic insect, disease, and wildfire disturbances and allow for increased biological and structural diversity.
- Understory productivity will increase in stands that are thinned and burned.
- Resource data, Historic Range of Variability (HRV) models and climate change predictions are acknowledged for their uncertainty while providing the best available tools for analysis
- Planned prescribed fire will occur within 5 years after silvicultural treatment
- Effects of management activities are well understood because they are the same techniques used in District level timber projects.
- Areas that have not been surveyed for botanical resources are assumed to be occupied

DESIGN CRITERIA FOR BOTANY, NOXIOUS WEEDS, AND RANGE

Sensitive Plants

- TESP-1 Identified treatment units falling outside of areas already inventoried for the presence of TES plant species will be evaluated for the need for further survey work. Those areas will be cleared for treatment through documenting the results of further surveys or through documenting the rationale why further surveys would not be necessary. This work will be overseen by the zone botanist.
- TESP- 2 Known TES plant populations will be identified as needed on the ground and or on maps for contract implementation prior to road grading and other road improvements, designation of parking areas and landings, and logging, with work overseen by a journey level botanist.
- TESP-3 No road construction activities, or staging areas (such as landings, parking, piling) on non-forested habitats such as lithosols, grasslands, or meadows.
- TESP-4 Avoid disturbing Davis fleabane/Snake River Daisy populations adjacent to Cold Springs Road (FS 4680) and feeder roads such as 4680200, 4680208, 4680212, 4680220, 4680219, and 4680170.
- TESP-5 Avoid ground disturbing activities on known TES plant sites.

Special Habitats

- BIO –1 Avoid disturbing natural seeps and springs, wet meadows, moist meadows, this includes removing shrubs and trees.

- BIOD–2 Leave tree islands in coniferous forest for conservation of native mycorrhizal fungi, yew, wet areas when these features are found or suspected in units. Mycorrhizae should always be suspected in coniferous forest units.
- BIOD–3 Maintain woody debris as per guidance from eastside screens to provide habitat for nonvascular plants and fungi.
- BIOD–4 Avoid yarding over rock outcrops and talus slopes. Leave trees and shrubs adjacent to rock outcrops, talus as a microclimate buffer.

Noxious Weeds

- INVP–1 The invasive plant program coordinator will determine and prioritize noxious weed treatments for existing and new sites, following ground disturbing activities.
- INVP–2 Identified treatment units falling outside of areas already inventoried for the presence of invasive plant species will be evaluated for the need for further survey work. Those areas will be cleared for treatment through documenting the results of further surveys or through documenting the rationale why further surveys would not be necessary. This work will be overseen by the invasive plant program coordinator.
- INVP–3 Avoid prescribed fire and ground disturbance from activities such as logging operations and road grading where invasive plant populations, including non-native invasive grasses, are found.
- INVP–4 Do not disturb Meadow Hawkweed in Swamp Creek, or other locations, such as the new meadow hawkweed population on 4600596, within the project area, through ground disturbance that will create bare soil or move seeds or vegetative parts of meadow hawkweed plants to new locations. Machinery used in Swamp Creek Meadow must be washed prior to leaving site.
- INVP–5 No parking, decking or piling on established weed sites.
- INVP–6 All landings, burn piles, skid trails and other disturbed areas created as part of a this vegetation restoration project, will be rehabilitated and seeded as per Pacific Northwest Region October 2005 Invasive Plant Program Preventing and Managing Invasive Plants Prevention Standard 2, and FSM 2070.3 with the input and approval of local botanist.
- INVP–7 Known invasive plant populations will be flagged and/or mapped prior to road grading and other road improvements, designation of parking areas and landings, and logging, with work overseen by the invasive species specialists. Equipment operators will receive maps with known sites and instructions to avoid flagged or otherwise identified areas.

Range

- Range–1 The range manager will work with the timber sale officer with respect to the timing and location of logging operations. Timber harvest within the project area is not anticipated to impact ongoing grazing operations. All gates must be closed while livestock are within the allotment adjacent to the harvest units.
- Range–2 There are numerous range improvements within the project area in addition to private land boundary fences in many locations. All improvements should be protected during timber harvest activities. If it is necessary to cut range fences, the purchaser must be required to immediately repair them to Forest Service standard. These standards are available and should be made a part of the timber sale contract.
- Range–3 No trees used as anchor trees along a fence line shall be marked for harvest.
- Range–4 If it is necessary to cut a fence to enter a harvest unit where livestock are present, the purchaser must be required to close and secure the fence each day at the end of work activities.
- Range–5 The botanist, invasive species specialist and range manager will work together to determine whether prescribed fire or other vegetation restoration activities will require resting portions of the pasture treated.
- Range–6 If any fences are damaged during burning operations, repairs must be made immediately to prevent livestock from entering areas outside of established allotments.
- Range–7 The range manager will work with fire management to determine timing and location of prescribed fire. Burn blocks should be planned in a manner that does not interrupt planned livestock management on the allotments. All burns will be coordinated with the District Range Management Specialist.

Fence construction (wildlife friendly)

- Range–8 Three and four-wire barbwire fence construction would consist of smooth wire on the lower wire at a minimum height of 16 inches above the ground. The maximum height of the topmost wire would be 42 inches above the ground. Spacing between the top wire and the next wire down would be a minimum of 12 inches for 3-wire construction, and a minimum of 10 to 12 inches for 4-wire construction.

To help ensure that implementation follows the intent of the analysis, a flowchart of sorts was developed as a means of tracking and documenting implementation considerations. Please consult the LJCRP shapefile for botany as well as the most current GIS data available when conducting GIS review.

DEFINITIONS

Activity Areas – Any area that may be impacted by timber removal activities including commercial harvest, non-commercial thinning, cut-and-chunk, chipping, road construction, skid trail construction, decking, piling, or any other activity associated with decreasing standing timber or support thereof.

Document/Documentation – Written notes describing discussions with other specialists or line officers regarding decisions during implementation that may impact botanical resources. Documentation can also include copies of email, meeting notes, maps, or other official papers describing discussion and/or decision process during implementation. These documents will be available should we receive a FOIA request or litigation.

Effective Survey – A field survey for botanical resources at a time of year where a trained botanist could identify sensitive species, species of local concern, potential habitat, and/or fens.

Harvest – This includes any human activity, mechanical or otherwise, that results in once standing timber, being cut (i.e. commercial or non-commercial thinning, cut-and-chunk, chipping, lop-and-scatter, etc.). It does not include activities such as decking or road construction that are in support of timber harvest.

Shapefile – For purposes of this document, shapefile refers to the MPBRP treatment polygon shapefile (with metadata included in Appendix A). **Pre-activity Shapefile** refers to the file of ATP or mitigations given to the timber pre-sale shop or other timber personnel for inclusion on the sale area map or contract map.

Implementation Review “Flowchart” (Please review definitions before starting)

		Go To	Comment
1a	The whole activity area is within treatment polygons defined in shapefile	6	
1b	Part of the activity area is outside polygons defined in shapefile	2	
2a	Harvest is proposed outside polygons in shapefile	3	
2b	Roads, piles, or decks proposed outside polygons in shapefile	3	
3a	Area has been surveyed for botanical resources and survey results still valid	4	
3b	Area has not been surveyed for botanical resources or survey results not valid (i.e. surveys were pre-2005)	5	
4a	GIS reveals no potential conflicts	C	
4b	GIS reveals potential conflicts	B	
5a	An effective survey for botanical resources can be conducted prior to pre-activity layout	D	
5b	An effective survey for botanical resources cannot be conducted prior to pre-activity layout	E	
6a	All activity areas are outside Hells Canyon National Recreation Area	8	
6b	All or part of activities proposed are within Hells Canyon National Recreation Area	7	
7a	Activity area does not contain “Biologically Unique and Rare Combinations of Outstanding and Diverse Ecosystems” (see assumptions)	8	
7b	Activity area contains “Biologically Unique and Rare Combinations of Outstanding and Diverse Ecosystems”	F	
8a	Area has been surveyed for botanical resources	10	
8b	Area has not been surveyed for botanical resources	9	
9a	An effective survey for botanical resources can be conducted prior to pre-activity layout	G	
9b	An effective survey for botanical resources cannot be conducted prior to pre-activity layout	H	
10a	Activity area contains no known populations of sensitive plant species or species of local concern	11	
10b	Activity area contains known populations of sensitive plant species or species of local concern	I	

11a	Activity area contains no unoccupied, identified potential habitat for sensitive plants or plant SOLC	13	
11b	Activity area contains unoccupied, identified potential habitat for sensitive plants or plant SOLC	12	
12a	Identified potential habitat located within activity area can be surveyed prior to implementation	J	
12b	Identified potential habitat located within activity area cannot be surveyed prior to implementation	k	
13a	Activity area contains no meadows/ scablands	14	
13b	Activity area contains meadows/ scablands	L	
14a	Activity area contains no wetlands/springs/seeps	17	
14b	Activity area contains wetlands/springs/seeps	M	
15a	Activity area contains slopes over 40%	N	
15b	Activity area does not contain slopes over 40%	O	

B	Non-harvest activities outside polygons with potential impacts to botanical resources need to be reviewed on the ground and concerns along with proposed mitigations need to be discussed with appropriate personnel (pre-sale, engineering, timber admin, etc.). If conflicts cannot be avoided, an area to protect (ATP) polygon will need to be included in pre-activity shapefile and/or issue brought to line officer's attention. Return to "6."
C	Document findings with a map and signed review. * Return to "6" to analyze rest of activity area.
D	Conduct survey for botanical resources, documenting survey and findings in the BKF Plant Database as well as a map attached to the signed review.* Once survey is conducted, return to "4."
E	Estimate potential risks to best of your knowledge, and present issue to line officer. One of the assumptions used in analysis was that unsurveyed areas are considered occupied. Document discussion and outcome and include in signed review. Return to "6" for rest of activity area.
F	In order for assumptions and HCNRA CMP direction to be met, these areas must be avoided during any activities. Submit polygons encompassing "unique biological features" to appropriate timber personnel and discuss implications with line officer. Document discussion and polygons submitted, and attach to signed review.* Return to "6" for areas outside HCNRA.
G	Conduct survey for botanical resources, documenting survey and findings in the NRM TESP/INVP Database as well as a map attached to the signed review.* Once survey is conducted, return to "8."
H	Estimate potential risks to best of your knowledge, and present issue to line officer. One of the assumptions used in analysis was that unsurveyed areas are considered occupied. Document discussion and outcome and include in signed review.* For areas that

	are surveyed, return to “10.”
I	Add a polygon to the pre-activity shapefile disclosing the area to be avoided in order to preserve the population (ATP) and/or mitigation that may decrease or eliminate conflict with this population. Include this discussion and/or map with polygon with the signed review.* Return to “10” for areas without known populations.
J	Visit the potential habitat and mark boundaries where treatment would impact the habitat (and potentially existing, but undiscovered individuals) using GPS. Include these polygons in pre-activity shapefile. Discuss possible mitigations with appropriate timber personnel and include documentation with signed review.* Return to “10” for areas without potential habitat.
K	Add identified potential habitat polygons to pre-activity shapefile. Be prepared to visit the site with timber personnel to discuss “on the ground” impacts and boundaries. Also be prepared to discuss mitigations and risks of activities within these areas with a line officer. Any discussions should be documented and included in the signed review. * Return to “11” for areas not identified as potential habitat.
L	Discuss potential uses of the meadow with appropriate personnel (pre-sale and timber admin). Ensure that if decking or temp roads need to occur in a meadow, that the area proposed does not contain botanical resources and the pile/road is in a dry area on the edge of the meadow as much as possible. Document (with signature if necessary) these discussions with other specialists or why such discussions did not occur. Check with watershed, range, weeds, wildlife, fuels, and engineering that the design criteria and/or mitigation you pull forward pertaining to meadows adequately captures the needs of these resources. Document discussion and attach a map to signed review.* Return to “13” for non-meadow areas in activity area.
M	Include wetlands in the pre-activity shapefile. Include a 100 foot buffer for exclusion of tracked and wheeled equipment, roads, skid trails, landings, and piles. Include a 200 foot buffer for spraying of trees with chemical MPB deterrents. Discuss with appropriate timber personnel any proposed treatment within wetlands or fens to ensure the design criteria are met. Document discussions and include in signed review. * Return to “14.”
N	If there are rare plant sites above or below proposed roads (temporary or system), design criteria applies. Let appropriate staff know immediately.
O	Combine all documentation and maps and proceed to Appendix A.

* Attach documentation to pre-implementation worksheet

Other things to consider:

- Are roads going to be temporary or system? Be prepared to visit road sites with engineers and/or a route review.
- Does the harvest plan include spraying of roads with magnesium chloride or calcium chloride? Make sure that these treatments are outside of the buffers indicated in design criteria.
- Does the harvest plan include cable logging? Make sure the snow depth and plant population avoidance design criteria are met.

Appendix A – LJCRP Pre-Implementation Review Coversheet

Pre-Implementation Review for Botanical Resources Lower Joseph Creek Restoration Project

Use this worksheet to document pre-implementation thoughts and decisions

Name of Sale/Contract Area: _____

District: _____ Type of Activity: _____

Review completed by: _____ Title: _____

Answer the following questions. List supporting documentation by enclosure number or document name. Attach any documentation (including maps) described in the flowchart to this cover sheet

		Enclosure
Area surveyed for botanical resources?	Y N	
Support activities (non-harvest) impact botanical resources?	Y N	
Proposed activities within HCNRA?	Y N	
Proposed activities overlap meadow?	Y N	Table B. Documentation of discussion with other specialists (Appendix B)
Proposed activities contain wetland/spring/seep?	Y N	
Identified potential habitat within activity area?	Y N	
TESP, INVP, or SOLC within proposed activity area?	Y N	
Was there a route review?	Y N	
Will roads be sprayed with chemical dust abatement?	Y N	
Will there be cable logging?	Y N	
Was there mitigation implemented in response to 0430 qualified botanist review of conflicts?	Y N	
Was a pre-activity shapefile required?	Y N	
Do you have additional documentation?	Y N	

*Summarize your thoughts and any conflicts, issues, or pertinent discussions you encountered for this project during pre-implementation. If you did not encounter any issues, say as much.

I have reviewed the proposed activity to be implemented under the Mountain Pine Beetle Response Project EIS, and certify that all botany design criteria have been met or mitigated. See attached documentation.

(signature)

(date)

Design criteria by resource, applicable units, and how each design criteria is addressed in the botany Field Guide.

Resource	Design Criteria From Field Guides	Applicable Units	Addressed in Botany Field Guide
Botany			
Hydrology			
Range			
Weeds			
Fuels			
Engineering			
Wildlife			

Implementation Monitoring for Botanical Resources Lower Joseph Restoration Project

Use this worksheet to document monitoring and site visits after work has been completed

Name of Sale/Contract Area: _____

District: _____ Type of Activity: _____

Date Activity Completed: _____ Date of Site Visit: _____

Review completed by: _____ Title: _____

Others in attendance: _____

See pre-implementation review to learn the mitigations agreed to prior to implementation.

		Comment
Were design criteria met?	Y N	
Were botanical resources impacted?	Y N	
Were mitigations effective?	Y N N/A	
Would you change your mitigation requirements? How and why?	Y N N/A	
Describe impacts to site observed.		
Would you do anything	Y N	

differently next time?		
General Comments on site/activities/experience.		
Has this monitoring information been shared with other specialists and/or staff? Who and how?	Y N	

This site review was completed by _____ on _____.
Name Date

Reviewer signature